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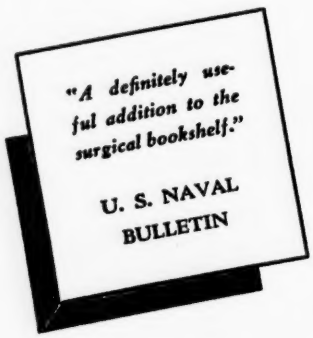
WHAT THE SURGEON SHOULD NOT DO!

Surgical Errors and Safeguards

— by —

Max Thorek, M.D.



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Volume III DECEMBER 1940 *Number* 6

Rupture of the Duodenum by Blunt Trauma

DRURY HINTON, M.D., F.A.C.S., F.I.C.S.
DREXEL HILL, PENNSYLVANIA

SEVERE trauma to the duodenum, amenable to surgery, is even rarer than a cursory review of the literature would lead one to suppose. To arrive at relatively accurate facts on this subject, more than 300 articles written since 1910 were studied critically, checked and cross-checked for duplication of cases. Otherwise, as can be seen in Tables 1 and 2, one would have a false idea concerning the frequency with which this lesion occurs. Guibé in 1910 collected all cases from the literature of 1835-1910 inclusive, noting the source of each case, with an abstract of the history and the bibliographical references. This is so complete that search of the literature prior to 1910 is unnecessary, although we find there no reference to Sir J. H. Dickson's case (*Med. Chir. Rev.* 33:586, 1840) of a 40-year-old male with four ruptures of the duodenum within 1½ inches of the jejunum, which ruptures occurred while straining at stool. It is stated that the man was thrown against a gun breech three days previously. There was no operation and death occurred eight hours after admission to the hospital.

The percentage of recovery in these early cases does not offer a fair comparison with the results of more modern surgery. Of Guibé's[1] 134 cases, 17 were at the duodenojejunal juncture; one patient lived. There were 62 operations *in toto* with four recoveries. Since hereafter in this article

ruptures at the duodenojejunal juncture are excluded, we may compare 117 cases, including three recoveries, with 84 cases that occurred since 1910 with 37 recoveries.*

TABLE 1.—INCIDENCE OF LESION

Author	No. of Abdominal Contusions	No. of Intestinal Ruptures	No. of Duodenal Ruptures
Noted by Guibé in 1910:			
Hildebrand	18	12	1
Makins (1889)	292	21	1
Thommen	49	18	2
Voswinckel	...	14	2
Allen	...	41	2
Quoted by Neumann:			
Hahn	133	22	1
Sherren	272	...	2
Poland (1858)	...	61	4
Curtis (1887)	...	116	6
Chavasse (1896)	...	140	7
Petry (1896)	...	198	9
Angerer (1900)	...	31	(?)
Gage (1902)	...	85	10
Tawatstjerna (1905)	...	168	9
Berry and Guiseppi (1908) included in Guibé	...	132	26
Tschistosserdorf (1912)	...	52	1
Hertle (1907)	...	86	15
Battle (1919)	...	215	32
Rowland (1923)	...	381	23
Massie (1923)	...	34	4
Moynihan (1926)	...	17	1
Koch (1927)	...	44	5
Wys (1929)	...	39	5
Blasker (1933)	...	132	23
Vergoz et al. (1933)	...	189	44
Cook (1929)	...	12	2
Cook	...	700	9%
Counseller (1935) states incidence is:			10%
Schmidt states incidence is:			6.66%

TABLE 2.—INCIDENCE OF LESION

Author	No. of Duodenal Cases	No. Recovered
Schumacher	91	..
Leibowicz	176	..
Eusterman and Balfour (1935)	238	22
Guibé (1910)	134	4
Quenu (1912)	138	9
Kanavel (1913)	94	7
Rudolfsky (1927)	35	6
Miller	37	1
Furtwaengler	118	14
Kohler (1932)	185	8.10%

*This does not include the author's case, reported at the end of the article.

Moynihan's case (1901) could be classed among the recoveries, since death occurred several months after operation from complications caused by the Murphy button. Meiner's[2] case (1932) and Meerwein's[3] case (1908), though listed among the recoveries, were really only rents in the serosa.

ETIOLOGY

The usual cause of rupture is a severe blow to the abdomen, such as the kick of a horse. Hugh Robertson[4] in his "Tabulation of Trauma" (Table 3) lists it among the consequences of a deep crush of the epigastrium. Vance[5,6] and likewise Robertson speak of the hydraulic mechanism when force is applied to a full stomach and continued from left to right. This bursting force is likely to cause a transverse tear near the pylorus, whereas crushing violence usually traumatizes the duodenum at the place where it crosses the vertebral column (see Table 4). Since we are concerned here only with the effect of blunt force to the abdomen, penetration of the duodenum by foreign bodies and the effects of operative trauma are not included in this paper. It should be noted that injuries of lesser degree, such as incomplete rupture (Meiner's[2] case), contusion and bruising with hematoma (Summers'[7] case, 1929), may occur. As these cases usually recover without operation, their relative incidence is unknown.

TABLE 3.—THE INJURED ABDOMEN: TABULATION OF TRAUMA (Robertson)

A pointed blow to the epigastrium:
1. Contusion or laceration of liver.
2. Rupture or laceration of gallbladder.
3. Rupture or contusion of stomach.
4. Extraperitoneal hematoma of anterior wall.

A deep crush of the epigastrium:
1. Rupture of right lobe of liver.
2. Complete separation of gallbladder.
3. Hematoma of omentum.
4. Contusion or rupture of pancreas.
5. Rupture or contusion of duodenum.
6. Rupture or contusion of jejunum.
7. Retroperitoneal hematoma of posterior wall.
8. Rupture or contusion of transverse colon.
9. Thrombosis of gastroepiploic vessels.
10. Thrombosis of superior mesenteric vessels.
11. Laceration of mesentery.

TABLE 4.—POSITION OF INJURY (Guibé)

Position	No.
Pylorus	7
First portion of duodenum	16
Second portion of duodenum	20
Third portion of duodenum	22
Junction of second and third	8
Fourth portion of duodenum	4
Duodenojejunal angle	32
Total	109

The high mortality in cases of rupture is due to several factors, among them (1) the frequency of associated serious lesions of other abdominal organs, fractures, etc.; (2) delay in operation; (3) nonrecognition of retroperitoneal ruptures before and indeed even at operation (Table 5). Indeed, were autopsies performed in all cases of accidental death, further lesions of the duodenum would doubtless be discovered. Cooke[8] reports that Bacon and LeCount in necropsy of 303 cases of accidental death found one transverse rupture of the duodenum.

TABLE 5.—DUODENAL LESIONS OVERLOOKED AT OPERATION

Author	Duodenal Lesions	No. of Operations	Lesions Missed*
Meerwein (1907), quoted by Kanavel (1913)	64	28	6
Berry and Guiseppi (1908)	...	13	6
Laffitte, quotes Guibé (before 1910)	22	14	6
Guibé (1910)	134	62	24
Miller	...	37	13
Blasker (1933)	...	23	7
Söderlund	...	29	14

*The majority of those missed were retroperitoneal ruptures later found at autopsy.

INCIDENCE

Rupture is more frequent in the male, for obvious reasons, and the relative incidence decreases with increasing age of the patient.

There is usually no obvious injury to the abdominal wall. Rupture may be anterior, posterior, anterior and posterior or complete division (the case of Harrington[9]). Although rupture is usually single, there have been reports of double, triple and even quadruple ruptures. The subperitoneal rupture may be converted into a retroperitoneal rupture by the increasing extravasation of fluid and finally by digestive processes into an anterior rupture. For this reason, in cases with delayed operation it is not always easy or possible to state correctly the primary position of the rupture. In spite of possible error, the 84 cases collected since 1910 are divided into three categories—anterior, anterior and posterior, and posterior (Table 6). The greater mortality of the retroperitoneal group has made them of greater interest to me. Of the 117 cases reported by Guibé, 26 were retroperitoneal, two patients recovering.

TABLE 6.—CASES SINCE 1910

Position	No. of Cases	No. of Deaths	No. of Recoveries
Anterior rupture	25	12	13
Not stated	1	..	1
Anterior and posterior	11	5	6
Posterior rupture	47	29	18*
Total	84	46	38

*Personal case not included.

SYMPTOMATOLOGY

Anterior ruptures comprise two-thirds of all cases; in this group are included all cases in which the lesion opens directly into the peritoneal cavity, excepting those in which there is a small leak through the root of the mesentery. The symptoms are similar to those produced by rupture of the stomach, except that pain is more right-sided and the vomiting of blood and gastric contents occurs in less than 50 per cent of the cases. There is shock, great pain, tenderness and increasing rigidity of the abdomen, i.e., symptoms of rapidly increasing general peritonitis.

Retroperitoneal ruptures comprise one-third of all cases. The lesion is more serious than the clinical appearance indicates. The

symptoms resemble those of rupture of an ulcer into the lesser peritoneal cavity; i.e., they are tardy or so mild and gradual in onset and progression that the gravity of the condition is not clearly apparent. Rigidity is not marked and shock may decrease, but later on the pain is greater and there is increasing evidence of a serious condition. Development of cellulitis and peritonitis increases the subjective and objective signs. Knaggs[10] has said that even the most experienced surgeon has great difficulty in coming to an early conclusion that the abdomen ought to be opened in cases of retroperitoneal injury. The temperature and pulse may be elevated and a moderate leukocytosis may appear. Sometimes there is pain in the right loin. Patients have been reported with little discomfort and in good general condition for forty-eight hours, with no fever and no leukocytosis; yet operation has revealed duodenal rupture, abscesses and extensive retroperitoneal extravasation of duodenal fluids. Later rigidity, tachycardia, vomiting and hiccough may occur. Testicular pain was noted in one case, and Butler and Carlson[11] were able by rectal digital examination to palpate emphysema in the pelvic tissues retroperitoneally. Sperling and Rigler[12] report a diagnosis made by X-ray on the basis of gas bubbles and striae around the right kidney, not changing position, decreasing over a period of twenty-one days and at a later date showing marked irregularity of the second portion of the duodenum. No operation was performed.

DIAGNOSIS

At operation the diagnosis of anterior rupture is readily made if exploration is carefully done. In the retroperitoneal case, in which operation is performed early on account of associated injuries requiring laparotomy, the chance of overlooking this lesion is in direct proportion to the severity of the other lesions and the haste with which the operation must be completed to save life. In delayed operations there is less likelihood of missing this injury. Hanchett[13] observes that surgical emphysema seen at operation, especially if between the peritoneum and the transversalis fascia, is due to retroperitoneal rupture of duodenum or colon. Crepitation and edema over the second and third portions of the duodenum indicate rupture. Serosanguineous fluid may leak through a small opening at the root of the mesentery. Laffitte[14,15] calls attention to the *tache verte* (green spot) overlying a rupture, also described by Schmorell[16], Leibowicz[17,18], Pedisic[19] and Meerwein[8]. Extravasation of blood, duodenal secretion, bile, and gas may be widespread and fat necrosis may occur.

COMPLICATIONS AND SEQUELAE

The more common sequelae are peritonitis and duodenal fistulae. Traumatic ulcers of the duodenum and stomach, subphrenic abscess (left), liver abscess (right), bronchopneumonia and stenosis (Oberthur[20]) have also been described.

GENERAL MANAGEMENT

Treatment includes (1) careful exploration for retroperitoneal injury; (2) aspiration of gastric secretion by continuous suction siphonage; (3) the best repair possible; (4) supportive measures; (5) if fistulas develop, the collection and reintroduction of fluids. In regard to treatment No. 3, anterior rupture lends itself best to operation by direct repair. Complete division is so serious that a fatal outcome is almost certain. Injuries of the posterior wall, after repair, usually require drainage, anterior or posterior; and either a jejunostomy, gastrojejunostomy or some other type of anastomosis, depending upon the possibility of direct repair or the necessity for resection.

A coincident duodenojejunostomy and gastrojejunostomy have been performed.

Methods of mobilizing the third and fourth portions of the duodenum for inspection have been well described by Hertle, who lengthens Kocher's incision, but better by von Winiwarter[21] and Kanavel[22]; for details of the operation the reader is referred to the source.

Evaluation of the different methods of surgical approach to the problems of duodenal rupture serves no useful purpose since each case is a distinct problem and must be solved on its own merits within the capability of the surgeon handling the case.

AUTHOR'S CASE REPORT

R. C., aged 13, white, male, was admitted to Delaware County Hospital February 26, 1938, at 5 P.M. While on a hike with boy scouts he was playing in an abandoned brick house in the woods. A side wall fell and he was buried in the debris. A companion ran about a mile for help. He was dug out, carried a mile to an automobile and then brought to the hospital.

PHYSICAL EXAMINATION.—The pulse was 120, temperature 99 F., respiration 25 and blood pressure 120/60. The patient was groggy but cooperative. The head showed lacerations in the right parietal region with apparent depression of the skull and lacerations of the right upper eyelid and the conjunctiva at the inner canthus; the eye was closed; there was some mild postnasal bleeding. The abdomen was tense; general tenderness was present bilaterally on deep palpation, most marked below the umbilicus; no organs were palpable; there was no movable dullness. Other findings were contusion of the right upper thigh and laceration of the right ankle.

TREATMENT.—The patient was treated for shock, the scalp was sutured, antitetanus serum 1,500 units was administered and an eye consultation ordered. He vomited a large amount of dark fluid once and during the night a small amount of bile. The urine was negative.

February 27: At 2:30 P.M. the patient complained of heaviness and pain in the abdomen, which was temporarily relieved by sedatives. His *knees were drawn up* and peristalsis was audible. Roentgenograms of the skull were negative.

March 2: Projectile vomiting, bile-stained, occurred at 2:30 A.M., 8 A.M., noon and 4:45 P.M. A continuous dull ache was present in the right upper quadrant. At 4 P.M. his temperature was 100.2 F., pulse 90, blood pressure 120/82; the leukocyte count was 4,800 (34 per cent stab forms).

March 3: Five vomiting attacks occurred in twenty-four hours, the last one light brown. The abdomen was flat; peristalsis was not audible; tenderness and rigidity were still present in the right upper quadrant, but there was less pain.

March 4: Duodenal suction (Wangensteen method) was begun. A film of the abdomen showed no free air in the abdomen. Since March 1 all fluid had been received by vein. At 3 P.M. an exploratory laparotomy was performed, followed by continuous duodenal suction (Wangensteen).

OPERATION NO. 1.—A paramedian upper right rectus muscle-splitting incision was made. A small amount of serosanguineous fluid was found. The stomach was moderately dilated and the small intestine collapsed. A fairly firm, edematous, retroperitoneal mass was found over the second and third portions of the duodenum, in which glistening lymph nodes could be seen. The right kidney merged into this mass. Palpation apparently reduced the size of the mass only slightly. It was felt that since he had gone over five days without serious results, decompression and rest might be safer than retroperitoneal exploration, and so the wound was closed with steel wire. (Prior to operation too much stress had been laid on cerebral injury as the possible cause of vomiting.)

TREATMENT.—On March 5 and 6 duodenal suction and proctoclysis were given continuously and glucose was given by the intravenous route. No vomiting and no pain were present. Duodenal suction was discontinued, and almost immediately nausea and the vomiting of large amounts of fluid ensued; in fact, the gastric output exceeded the intake from all sources. The abdomen was soft and peristalsis was fair.

March 10: The patient was seen in consultation by Dr. William Bates, who agreed that another operation was advisable.

OPERATION NO. 2.—An upper right rectus incision was made and the rectus abdominis was retracted outward. A posterior gastrojejunostomy, short loop, antiperistaltic, was performed. A tube was passed through the left nostril and stoma 14 inches into the jejunum. The stomach was dilated and atonic. A transfusion of 350 cc. of citrated blood was given for the blood protein rather than for the erythrocytes. Wangensteen drainage was continued through the right nostril.

March 11: The fluid intake was 2,305 cc.; urine voided was 990 cc. The gastric drainage was 1,225 cc. The patient expelled flatus and had a very thin, almost liquid-like bowel movement, the first since admission.

March 12: The fluid collected from the Wangensteen tube was fed back through the jejunal tube. Four pasty brown stools were passed. A Bilron capsule was given three times a day and milk, cream, olive oil and molasses were fed through the jejunal tube at two-hour intervals.

March 14: The Wangensteen tube was clamped for one hour and all night except between 2 and 3 A.M.

March 15-17: The tube was clamped for two hours; fluids were begun by mouth; only the night biliary drainage was used. Occasional vomiting occurred.

March 18: Fluoroscopic and roentgenologic examination showed complete obstruction at the place where the duodenum crosses the spine and a filling defect of the first portion and another at the end of the second portion; barium drained through the stoma when the patient was placed in the high Fowler and the elevated supine positions. Prostigmine one-half ampule was given every six hours.

March 19: The high Fowler position (two hours) was alternated with the high elevated prone position

(one hour). The tube was clamped two hours p. c. A transfusion of 350 cc. of blood was given. Cereals were added to the diet.

March 20: The Wangensteen tube was clamped and the patient was placed on a soft diet.

March 21: Wangensteen tube was removed and the jejunostomy tube was withdrawn 6 inches.

March 23: The jejunostomy tube was clamped.

March 25: The jejunostomy tube was removed. Prostigmine was given three times a day.

March 26: Large, medium brown stool, formed for the first time.

March 27: Prostigmine was given twice a day.

March 28: A full diet was ordered.

RECOVERY.—The patient was allowed to be out of bed for the first time on March 29 and was dismissed on April 3. Fluoroscopic and roentgenogram examination on April 11 showed that with the patient in flat prone position the stomach emptied readily through the pylorus; with the patient in the erect position it emptied readily through the stoma. A follow-up examination on November 20, 1939, showed the patient to be fat and in good condition with no disability whatsoever.

LABORATORY REPORTS

URINE.—Range: albumin from faint to heavy trace. Sugar from trace to 4+ from February 26 to March 7.
Hyalin casts, a few on March 7.

BLOOD.—Range: Hgb. 67 to 85; RBC 3.45 to 4.75; WBC 4.600 to 10.900; P 76 to 93; Lym 4 to 48; E. 0 to 3; B. 0 to 1; M. 0 to 3; Stab. 10 to 38; Seg. 43 to 77.
March 8, blood sugar 96.5.
March 16, blood chlorides 510.
March 17, CO_2 combining power 60 vol. %.
March 18, CO_2 combining power 50 vol. %.
Type IV Moss.

GASTRIC DRAINAGE.—March 11. Small masses are mucus with epithelium and pus cells. No RBC. Bile strongly positive. Occult blood positive but does not indicate any amount of hemorrhage. Pancreatic amylase, 50 units.

STOOL.—March 18. Occult blood strongly positive. No gross or microscopic blood. No neutral fats or fatty acids, many soaps. No starch granules or meat fibers.

SUMMARY

A careful extensive research of the world's medical literature since 1910 supplements the report of Guibé made in that year. The report is confined to ruptures of the duodenum by direct trauma; all of the cases since 1910 are considered, as well as a personal case. Ruptures of the duodenojejunal junction are omitted unless the lesion involved the fourth portion of the duodenum. Results of treatment are given in tabular form.

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RÉSUMÉ

Rupture du duodénum pour brusque trauma

Une recherche attentive et étendue de la littérature médicale mondiale est ajoutée à la rélation de Guibe depuis le 1910. La rélation est confinée à les ruptures du duodénum par direct trauma et réporte tous les cas depuis le 1910 avec un cas personnel et les résultats du traitement sous forme de table.

Les ruptures du point de passage entre le duodénum et le déjunum sont omises, au moins que la lésion n'occupât pas la quatrième portion du duodénum.

ZUSAMMENFASSUNG

Duodenalruptur bei stumpfen Trauma

Genaue Durchsicht der medizinischen Weltliteratur ergänzt den Bericht von

Guibé seit 1910. Der Bericht beschränkt sich auf die Rupturen des Duodenum durch direktes Trauma, indem alle Fälle seit 1910 aufgezählt werden plus einem persönlichen Fall wobei die Resultate der Behandlung in Tabellenform gebracht werden.

Ruptur der duodenojejunalen Vereinigung werden nicht besprochen ausser in Fällen, wo sie ein viertel des Duodenum in sich verwickeln.

RESUMEN

Lesíon del duodeno causada por trauma

Se ha hecho un estudio muy extenso de la literatura médica del mundo, el cual se ofrece como suplemento al trabajo de Guibé, desde el año 1910. El presente artículo solamente describe punturas o heridas del duodeno que resultan de trauma directo, y da cuenta de todos los casos desde 1910, con resultado en cada caso.

Heridas de tal clase en la juntura "duodenojejunal" se describen solamente cuando la cuarta sección del duodeno está afectada.

RIASSUNTO

Rottura del duodeno per trauma improvviso

Un'attenta ed estesa ricerca della letteratura medica mondiale si aggiunge alla relazione di Guibé del 1910. La relazione è confinata alle rotture del duodeno da trauma diretto, e riporta tutti i casi dal 1910, con un caso personale e i risultati del trattamento sotto forma di tavola. Le rotture del punto di passaggio tra duodeno e digiuno sono omesse, a meno che la lesione non occupasse la IV porzione del duodeno.

CONGRESO INTERNACIONAL DE CIRUJANOS

Con gran entusiasmo y actividad la Regencia Nacional Mexicana del Colegio Internacional de Cirujanos está trabajando en la organización de la próxima Asamblea Internacional de Cirujanos que se verificará en la ciudad de México en el mes de Agosto de 1941.

Para que la organización nacional resulte un éxito han sido nombrados en toda la República Delegados para cada Estado como sigue:

Aguascalientes, Dr. Rafael Macías Peña; Baja California, Dr. Joaquín Galván de la Garza; Campeche, Dr. Alvaro Vidal; Coahuila, Dr. Alberto Madrid; Chihuahua, Dr. Manuel Mendiolea; Distrito Federal, Dr. Francisco Fonseca García; Durango, Dr. Carlos León; Guanajuato, Dr. Benjamín González N.; Hidalgo, Dr. L. Gómez Jáuregui; Jalisco Colima, Dr. Manuel R. Alatorre; Morelos-Guerrero, Dr. Angel Ventura Neri; Nuevo León, Dr. José G. Martínez; Oaxaca, Dr. Manuel Matos; Puebla-Tlaxcala, Dr. A. Cruz y Celis; Querétaro, Dr. Esteban Paulín; San Luis Potosí, Dr. Ignacio Morones Prieto; Sinaloa-Nayarit, Dr. Bernardo J. Gastélum; Sonora, Dr. Ignacio Cadena H.; Tabasco-Chiapas, Dr. Guillermo Legarde Bazán; Tamaulipas, Dr. Carlos Canseco; Yucatán·Quintana Roo, Dr. Benito Ruz Quijano.

Es de esperarse que el cuerpo médico mexicano reciba con interés y aproveche la oportunidad que se le brinda de asistir a este Congreso Mundial de Cirujanos que para honra de nuestro país se verificará por esta vez en nuestro suelo.

El Delegado por el Estado de Guanajuato
DR. BENJAMIN GONZÁLEZ N.

Strangulated Hernia—Reduction En Masse

Review of the Literature with Report of an Unusual Case

MAX MICHAEL SIMON, M.D., F.A.C.S., F.I.C.S., and
HAROLD AGUSTUS BENSON, M.D., M.I.C.S.

POUGHKEEPSIE, NEW YORK

A FRANK discussion of our failures as well as our successes provides a wholesome lesson and one not sufficiently indulged in. The purpose of this paper is:

1. To report an unusual case of strangulated hernia which was reduced en masse into the abdomen.

2. To emphasize the dangers of attempting to reduce a strangulated hernia.

3. To point out that immediate operation is still the treatment of choice for strangulated hernia; and that there is absolutely no contra-indication to this operation except a moribund condition.

Although most surgeons are pretty generally agreed on the imperative necessity for immediate operation in strangulated hernia, some still attempt mechanical reduction of the hernial contents—so-called taxis. Textbooks of surgery still describe elaborate methods of taxis for the different varieties of strangulated hernias. One author states, "It is sometimes permissible to attempt taxis for strangulated hernia when the patient is seen within two to three hours after the onset of symptoms."[1] In fact it appears to be generally held that taxis may be tried in recent cases of strangulation.

The case reported herein illustrates one of the dangers of attempted mechanical reduction of a strangulated hernia in a man of 55. It also serves to illustrate that time is a hazardous indicator of the amount of damage done in a strangulated hernia. In a given case, strangulation of only a few hours' duration may do more damage than one that has lasted for days. This case also illustrates how reduction of a strangulated hernia without relieving the constriction of the intestine, or reduction en masse, can occur.

CASE REPORT

History. E. E., age 55, was admitted to St. Francis Hospital at 1 P.M. January 7, 1940. He was acutely ill, in moderate degree of shock, and complained of severe pain in the right lower abdomen and nausea and vomiting of about 24 hours' duration. His past history was negative except for an old right inguinal hernia which he had had for about 15 years and for which he wore a truss. This hernia had given him no trouble prior to admission, since it was easily reducible and retainable by the truss, which he stated he wore with comfort. About 24 hours previous to admission he was moving cars about in a garage when he experienced a sharp pain in the right lower quadrant and groin which radiated to the navel. He ceased work, went home and when he was unable to reduce the hernia, summoned his family doctor. Although he had always before been successful in reducing the hernia, this time he could not get it back. When his family doctor arrived (2 hours after the onset of symptoms) he noted an elongated, pear-shaped mass presenting in the right groin. It was tense and firm and gave the patient nausea on pressure. The patient refused hospitalization and since he had had

a recent acute upper respiratory infection with cough his physician consented to attempt treatment at home. He was given a hypodermic of morphine sulphate, gr. ¼, following which his physician succeeded, after some manipulation, in reducing the presenting mass. The attending physician assured me (M.M.S.) that no undue force was used and that the hernial mass was reduced easily. The patient felt relieved after the reduction, but about 6 hours later he experienced cramp-like pains in the right lower quadrant of the abdomen radiating to the navel. The pain was accompanied by nausea and vomiting. The pain and vomiting continued throughout the night. There was no bowel movement or passage of gas by rectum. No laxatives or enemas were given. The family physician was called again early in the morning and advised admission to the hospital, to which the patient consented.

On admission (14 hours after the onset of symptoms) physical examination revealed an adult, white male of about 55 but appearing older, acutely ill, coughing occasionally, not cyanotic, but somewhat dyspneic.

General physical examination was essentially negative except for carious teeth, a red throat, and scattered rales throughout the chest. His heart was apparently normal. The blood pressure was 110/90; temperature 99.8 by rectum; pulse 86; respiration 24; the abdomen was moderately distended. There was marked fullness of the lower abdomen, more pronounced on the right side, with pain and tenderness and rebound tenderness in the right lower quadrant. There was definite right muscle guard. The right external inguinal ring was moderately enlarged, and on coughing, a tense, globular mass could be felt just beyond the ring. Other hernial orifices revealed no abnormalities and rectal examination showed no tumors or hemorrhoids and only moderate enlargement of the prostate gland.

Urine analysis, single specimen: dark amber, cloudy, acid, S.G. 1021, slight trace of albumin, no sugar, no casts, occasional epithelial cell. Blood count: hgb. 90 per cent; 6,450,000 R.B.C.; W.B.C. 17,000; 90 per cent polys; 10 per cent lymphocytes.

The persistence of symptoms and physical findings demanded immediate operative intervention. An intravenous infusion of 1,500 cc. of 2½ per cent glucose in saline was given pre-operatively, with a hypodermic of morphine sulphate, gr. ¼. Operation was performed under local infiltration anesthesia (novocain 1 per cent).

Findings. Operation disclosed that a sac about the size of a goose-neck squash with a dense constricted neck had been completely reduced en masse into the abdomen. The neck of the sac was about 1½ inches in circumference. Upon opening the sac, which was acutely distended with straw-colored fluid, a strangulated loop of terminal ileum about 8 inches in length was encountered. The appendix was likewise strangulated in the sac. The appendix was completely gangrenous from its tip to within ¾ inch of its base. The strangulated loop of terminal ileum was covered with a thin, fibrinous exudate, but was definitely viable with scarcely any impairment of circulation or luster. The small intestine appeared normal in color and luster after the application of warm saline packs. There was no clotting in the mesenteric vessels and arterial pulsation was good.

Procedure. A right oblique inguinal incision about 4½ inches in length was made. The inguinal canal was opened. The sac was identified and was brought outside the abdominal cavity. It was dissected free to its neck, which was dense, narrow and constricted. The neck of the sac was divided and the hernial contents identified. The sac was completely opened. The strangulated bowel was released and placed under hot saline compresses. The gangrenous appendix was removed. The viability of the small

intestine was ascertained and then returned to the peritoneal cavity. The sac was then completely dissected out and removed, the neck of the sac was transfixed, doubly ligated and the stump tucked under the internal oblique muscle. A Halstead type of repair was then done with transplantation of the cord. Chromic catgut No. 2 was used throughout, except No. 1 plain for the ties. Dermal and silkworm gut were used for the skin.

The patient made an uneventful recovery. The wound healed by primary union, all sutures were removed on the ninth postoperative day and the patient was discharged on the fourteenth postoperative day (January 21, 1940). He returned to work on March 5. His general condition is excellent, he has gained 5 pounds in weight, and is the picture of health.

INCIDENCE

A majority of the cases of reduction en masse reported in the literature were found at autopsy or were reported in the days when taxis was always attempted before resorting to operation. Although violent taxis is no longer practiced and recourse to operation is earlier, reduction en masse is still reported by Eliason,[2] Hosan and Minter. Undue force or taxis was not a prominent feature of their cases. The prognosis for reduction en masse is grave and the mortality rate is high. The literature reveals that reduction en masse occurs nearly always in males and most commonly in the inguinal region. Corner and Howitt collected 137 cases of reduction en masse.[3] In 68 the hernia was in the right side, in 39 in the left and in the remaining 30 the side was not stated.

CONCLUSIONS

1. Immediate operation without preliminary taxis should still be the treatment of choice in all strangulated hernias. The terse saying of Strohmeyer is sufficiently emphatic, "Do not let the sun rise on a strangulated hernia if first seen at night; and do not let the sun set upon a strangulated hernia if first seen by day."

One occasionally feels justified in attempting mechanical reposition of a strangulated hernia in an elderly patient, but it is here that the greatest danger is encountered because inguinal hernia in the aged is associated with an excessive amount of extraperitoneal fat and relaxation of the peritoneum. Reduction en masse may follow the gentlest degree of taxis.

2. The advantages of immediate operation without preceding taxis, though generally recognized, are sometimes disregarded in the hope that the strangulation can be reduced and operation postponed or avoided. The safety and low mortality of operation under local anesthesia is the best argument against taxis.

3. Taxis is always dangerous in a strangulated hernia, irrespective of the duration of the strangulation, since time is no indicator of the amount of damage to the viscera.

SUMMARY

The inadvisability of mechanical reduction in strangulated hernia (taxis) is emphasized. An unusual case of strangulated hernia reduced en masse into the abdomen is reported and the operative procedure described. The incidence of reduction en masse is reported from the literature. Immediate operation is still the treatment of choice in strangulated hernia.

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RÉSUMÉ

Hernie étranglée—réduction en masse

La réduction mécanique n'est pas un procedé a recommander dans les cas de hernies étranglée. Un cas rare de hernie étranglée ayant été réduite en masse et l'intervention opératoire sont décrits. L'incidence de réduction en masse et la littérature du sujet sont étudiées et analysées. L'operation immédiate est, et reste, le traitement de choix de la hernie étranglée.

ZUSAMMENFASSUNG

Eingeklemmter Bruch—Reposition en masse

Es wird betont, dass die mechanische Reposition eines eingeklemmten Bruches (Taxis), nicht ratsam ist, Ein ungewöhnlicher Fall eines eingeklemmten Bruches wird beschrieben welcher en masse ins Abdomen reponiert wurde und es wird das operative Verfahren erklärt. Vorkommen einer Reposition en masse ist aus der Literatur berichtet. Bei eingeklemmter Hernie ist sofortige Operation immer noch das Mittel der Wahl.

RESUMEN

Hernia estrangulada—redución en masa

La reducción mecánica de hernias estranguladas no es aconsejada. Un caso de hernia estrangulada reducida en masa en el abdomen es reportado y el procedimiento quirúrgico descrito. La incidencia de la reducción en masa es reportada en la litoratura. Operación immediata es aun el tratamiento á escoger en hernias estranguladas.

RIASSUNTO

Ernia strozzata—riduzione totale

La inopportunita' della riduzione meccanica di un'ernia strozzata (Taxis) e' sempre piu' evidente. E' riportato e descritto il procedimento tecnico in un caso insolito di ernia strozzata, ridotta in "tota" nell'addome. L'incidenza della riduzione totale e' riportata nella letteratura. L'operazione immediata e' tuttora il rimedio preferito nell'ernia strozzata.

INTERNATIONAL ASSEMBLY

Those desiring to present scientific exhibits at the forthcoming International Assembly of the International College of Surgeons in Mexico City (August 10th to 14th inclusive, 1941) please communicate with the Secretary of the Scientific Assembly, Dr. Charles H. Arnold, 941 O Street, Lincoln, Nebraska.

Central Glioma of the Brain

CASE REPORT

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ALTHOUGH neurosurgery in general has received a great deal of attention in medical literature, few cases relating to the surgery of brain tumors have been published; because of this the following observations may be of some interest. The clinical study was confirmed in all details by an anatomopathological study.

CLINICAL DATA

A man 38 years old, a native of Cerritos, San Luis Potosí, came to me with a diagnosis of intracranial tumor. Upon his arrival his condition was so delicate that he could not stand up, and he had to be met at the railroad station by an ambulance. His mental faculties, while not actually deranged, were not normal. He complained of a frequent sharp pain in the right temporal region, which invaded the frontooccipital region and which was accompanied by great depression and at times by lipothymia and bradycardia. Upon witnessing several of the attacks of this patient I noticed at once that the ocular globes shifted to the right, as did the face, which also became pale. At the time of the attacks he would not answer questions that were put to him and his pulse sank to 50.

Questions put to him and his family revealed that three months previously the patient had undergone a change of character; since then he had less energy, and though ordinarily extremely methodical in his habits, was now disorderly. In the last two months he had suffered the painful attacks above described, which sometimes came three times in twenty-four hours. In the intervals, he sometimes felt entirely well, but at other times suffered from a painful sensation in the right temporal region and the right portion of the frontal. When the pain came at night, the patient lost sleep; this state of unrest was relieved only by smoking or taking a narcotic. Lately he had noticed numbness in his lower members, with pain spreading to the region of the nucha. Lipothymia was also present. Sometimes he partially lost consciousness, without being in a real coma; this was always at times of extraordinarily painful attacks. For over a month he had suffered from spells of easy vomiting, unaccompanied by nausea, sometimes merely on changing his position in bed.

Few data of importance were gathered in the examination of his respiratory, circulatory, urinary and genital tracts. Pathologically his history revealed rheumatism, typhoid and probably malaria. His father, who was alive, had suffered from neuralgia; and his mother, also alive, had hemiplegia, possibly due to cerebral embole. His wife had had no abortions and they had four healthy children. He had smoked a package of cigarettes daily for over twenty years, lately less because of doctor's orders. In appearance he was old for his years, being thin and bald. He also showed facial assymetry, the right buccal commissure shifting upward. It was necessary for him to remain lying down or partly seated.

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The cardiac noises were normal; arterial tension had a maximum of 12.5 cm. and a minimum of 8; his pulse at the time of examination, not at the time of painful attack, was 60. His pupils were the same, reflections to light and accommodation being present. Mobility of facial muscles was normal, only a slight hypertonia of those on the right side being noticeable. Tendinous reflexes of the superior members were normal. The left rotular reflex was observed to be slightly more marked than the right. Both cutaneous plantar reflexes were abolished; the right cutaneous abdominal reflex was more marked. Both cremasterine reflexes were normal.

A urinalysis made in the patient's place of residence by Dr. Pablo Martínez Loyola was normal. Wassermann and Kahn blood tests (Dr. Gustavo Flores) were negative. Analysis of cerebrospinal fluid (Dr. Loyola) showed 28 leukocytes per cubic millimeter. Reactions of Pandy, Noguchi, Rosse and Jones were also negative. Blood analyses (Dr. Flores) gave these results: eosinophile 3 per cent, polynuclear neutrophile 71 per cent, lymph 25 per cent, and monocytes 1 per cent; plasmodium was not found in any of its forms nor were there pigment or globular morphologic changes.

The clinical picture was that of a cerebral ailment, revealing itself in painful attacks on the right side of the head, in lipothymia, partial loss of consciousness, vomiting spells, bradycardia and shifting of the ocular globes and of the face. All this made me believe it possible that something intervened in the etiology of the picture which was capable of increasing the intracranial pressure and denoted the peripheric manifestation of an algid form of a cortical zone.

CEREBROSPINAL EXAMINATION

A lumbar puncture was made in a horizontal position. The pressure on the Claude manometer was 24 cm., rising to 29 after a coughing spell and to 36 on compressing the jugulars. Ten cm. of cerebrospinal fluid were withdrawn under a pressure of 12 cm.; compression was made of the jugulars and it rose to 20. There was moderate hypertension; normally in a horizontal position the pressure with the Claude is 15 cm. There was no blocking.

Examination of the cerebrospinal fluid by Dr. Luis Gutiérrez Villegas gave the following results:

Physical Examination.—Appearance, rock water; coagulation, null; formation of film, negative.

Globulin Investigation.—Pandy reaction, very weak positive; Nonne-Appelt reaction, negative; Noguchi reaction, negative.

Albumin Dose.—0.22 grams per 1,000 cc. Sicard.

Cytological Examination.—2 lymphs per mm.

Gradual Wassermann Test.—Negative, with 1 cc. of cerebrospinal fluid and smaller quantities. Antigen of Bordet-Ruelens.

Lange Test.—0.0.0.1.1.0.0.0.0.0.

The character of the cerebrospinal fluid was thus nearly normal; the reactions to syphilis were negative.

OCULAR EXAMINATION

An ocular examination by Dr. Luis Sánchez Bulnes brought out these facts:

1. There was marked edema in both papilla, but much greater in the right eye, where there were also small hemorrhages.

2. The visual field could not be correctly defined, owing to the mental state of the patient, but from the few data on hand it was certain that if any modification existed it would be only peripheric, without there being hemianopsia.

3. Sharpness of vision in both eyes.

4. In neither eye were there disturbances of the extrinsic or intrinsic muscles.

5. There was no nystagmus.

A papillar edema of such intensity, with a sharpness of one, and without other ocular trouble, indicates a brain tumor. Observa-

tions have shown that the edema is more marked in the papilla on the side of the tumor, and that the farther back the tumor, the greater the edema.

EAR, NOSE AND THROAT

Dr. Plutarco Torres Luquin, who made the ear, nose and throat examination, found the following data:

Hearing.—Appearance of the tympanic membrane and mobility in the Siegle glass were normal on both sides. Acuteness of hearing, investigated by watch and gradually receding voice, was slightly less on both sides. The air hearing, investigated by the diapason of 128 v.d., was found normal. Weber, no results.

Vestibular function (clinical test): That of the arm was performed, and that of indication and reposition of the index, without finding any abnormality. There was no spontaneous nystagmus.

The Romberg sign, the Babinski-Weill reflex and the provoked nystagmus were not investigated because of the patient's condition. The instrument test, pneumatic, caloric, rotatory and voltaic, was also dispensed with in view of the patient's condition.

Nose.—Slight congestion and tumefaction of both cornets were found, also thickening and slight deviation of the nasal septum in the lower part.

Throat.—Normal.

From the above data we drew the following conclusions:

1. The patient showed an apparent slight loss of hearing on both sides, perhaps owing to his difficulties in explaining his auditory sensations.

2. There were no changes in the vestibular function.

3. No remarkable difference was revealed in the comparison of one ear with the other.

4. The small nasal lesions do not, I believe, have any relation to the pathological condition of the patient.

URINE AND BLOOD

Dr. Abel Ramiro Moreno analyzed the patient's urine and blood, with the following results:

Urine

Quantity received, 1,380 cc. from 24 hours.
Color, Vogel II.
Smell, ammonia.
Appearance, clouded.
Sediment, very abundant.
Reaction, alkaline.
Density, 1,010.
Albumin, none.
Glucose, normal.
Acetone, some.
Acetic acid, none.
Hemoglobin, none.
Biliary S., none.
Biliary P., none.
Urobilin, increased.
Indigogen, normal.
Phosphates, 12 grams per thousand.
Microscopic examination of the sediment, very abundant tricalcic phosphates.
Conclusion, phosphaturia and acetonuria.

Blood

Time of bleeding, 5 min., 30 sec.
Coagulation time, 13 min.
Greater duration than normal in both.

Dr. Alberto Lezama made the Wassermann test, using three technics. With antigen Bordet-Ruelens in the two first technics, the results obtained were:

Wassermann test (Kolmer technic), negative.
Hecht test (Weinberg technic), negative.
Muller test (technic and antigen of Muller), negative.

Other results showed:
Leukocytes, 11,900 per mm3.
Neutrophile granulocytes with one nucleus only, 5 per cent.

Neutrophile granulocytes of more than one nucleus, 70 per cent.
Lymphs, 22 per cent.
Monocytes, 2 per cent.
Metamielocytes neutrophile, 0 per cent.
Eosinophile granulocytes, 1 per cent.
Basophile granulocytes, 0 per cent.
Arneth image: I, 5 per cent; II, 16 per cent; III, 44 per cent; IV, 33 per cent; V, 2 per cent.

In a blood slide performed during a feverish attack, the patient had an axillary temperature of 38 C. We did not succeed in finding forms of Laveran hematozoon or melanic pigment.

DIAGNOSIS

Dr. Santiago Ramírez was called into consultation; after a detailed neurological examination, and in view of the fact that evident brain symptoms had been found, he concluded that the condition was undoubtedly an intracranial neoplasm and that it was possible for such a neoformation to be found in the right cerebellar lobule. It is worth noting that at the time the patient was examined by Dr. Ramírez, he had dizzy spells, cerebellar march and other symptoms associated with ailments of the cerebellum, from which the attending physicians concluded that the cerebellum syndrome was evidently present and could help locate the neoplasm.

Two days later, Dr. Adolfo M. Nieto was called into consultation; after a detailed neurological examination, he agreed that there was present an intracranial neoplasm, but thought the data insufficient to determine the topography of the tumor.

In view of these opinions, ventriculograms (Figs. 1-3) were taken. With local anesthesia, two small trepanations were performed in the occipital portion of the occipital frontal region. The right cerebral ventricle was inaccessible. The left cerebral ventricle was punctured; the pressure, gauged on the Claude manometer, was 24 cm., the patient being seated. Twenty cc. of fluid was extracted; this had a normal appearance. Fifteen cc. of filtered air was injected.

The radiograms, made by Dr. José Araujo G., showed a collapse of the right cerebral ventricle (the reason no puncture could be made), with a marked deviation of the whole encephalic ventricular system. The septum lucidum was notably deviated to the left. The appearance of the ventriculogram was considered characteristic when a right cerebral tumor exists, which pushes the cerebral ventricles to the left. The normal ventricular capacity and tension (greater than normal, 24 cm. on the Claude manometer) affirm that the tumor was supratentorial. The ventricular pressure normally reaches 10 cm.

On the basis of these observations and the above-mentioned lumbar puncture, with the manometric results, we could affirm that there was no blocking. In short, there existed a right cerebral tumor behind the rolandic zone, and in front of the occipital lobule.

During these days the patient's condition had not improved. His painful attacks were intense, accompanied by partial loss of consciousness and bradycardia. Sometimes there were evident mental changes, characterized by psychic laziness, lessening of attention and memory and by childishness. Spells of easy vomiting often made eating difficult.

In view of all the above-mentioned data, the following diagnosis was made: cerebral tumor above the tentorium of the cerebellum, which occupied the right cerebral hemisphere and was situated behind the rolandic zone and in front of the occipital lobule.

OPERATION

With local anesthesia, novocaine without adrenalin, a right hemicraniectomy was performed; the electric trepanum was used for the trepanations and the Gigli saw for

cutting. Once the dura mater was opened, it was observed that the brain did not pulsate and that a hernia occupied the trepanated zone. Two punctures were made, from which no fluid was obtained. Immediately that part of the shell was sliced which was most prominent, corresponding to the posterior part of the operated zone. Across the cut in the brain there was felt a large, hard area, about 4 cm. from the shell. The deep location and great size of the hard part, also the rich vascularization, impeded its excision. It was closed without canalization.

The postoperative diagnosis was cerebral tumor of the right hemisphere, subcortical and inextirpable.

POSTOPERATIVE COURSE

The family was notified that the condition was fatal because of the nature of the tumor, its position, size and impossibility of excision.

Thirty-six hours after operation there appeared a left flaccid hemiplegia. The patient was in a lethargic sleep. His general condition was relatively good. There was no meningism.

Four days after the operation the hemiplegia began to turn into espastic, especially in the left upper member. There were no more painful attacks, his pulse was 70, his mental condition was satisfactory enough, his intestinal and urinary functions were normal.

Seven days after the operation a projection in the wound was noticed, indicating that something was pushing out from the inside.

The next day a hernia appeared in the posterior part of the incision. In the following days, without the patient's experiencing any difficulties, several pieces of cerebral substance were eliminated. His state on the tenth postoperative day seemed relatively satisfactory, but the cerebral hernia did not tend to lessen. Twelve days after operation the patient's condition was once again characterized by spells of easy vomiting; his pulse went up to 90 and his temperature rose suddenly to 40 C. He died fourteen days after being operated upon with a temperature of 41 C.

AUTOPSY

The brain was extracted from the corpse. Dr. Luis Benitez Soto made the histologic examination, with the following results:

Right hemicerebrum in formaldehyde at 10 per cent. Fragments of the central lower portion presented macroscopic characteristics different from those in the frontal and occipital lobules, the latter being normal. It was immediately noted that such fragments were white and of firm consistency. After freezing them in sections, the cuts were dyed by means of argentic impregnation and examined under the microscope. We observed first the histologic uniformity of the piece, with cells and fibers evenly distributed (Fig. 4). The cells were glia cells and endothelial cells of the vessels. The glia cells were more numerous than is normal and had the characteristics of the macroglia, that is to say, of the astrocytaria glia; the endothelial cells presented normal characteristics. The straight, wavy, thick and thin fibers formed bunches and tangles in which the absence of anastomosis was noted. The blood vessels (particularly the capillaries) were increased in number (Fig. 5).

From the examination there emerged the following facts: In the base of the brain there was found a portion of new tissue characterized under the microscope by its white color and firm consistency. Microscopically, it was of uniform histologic appearance. Its histologic composition included macroglia cells, glia fibers and neocapillaries.

The main lesion consisted in the numeric increase of the glia, which formed a real cellular construction. This circumstance in-

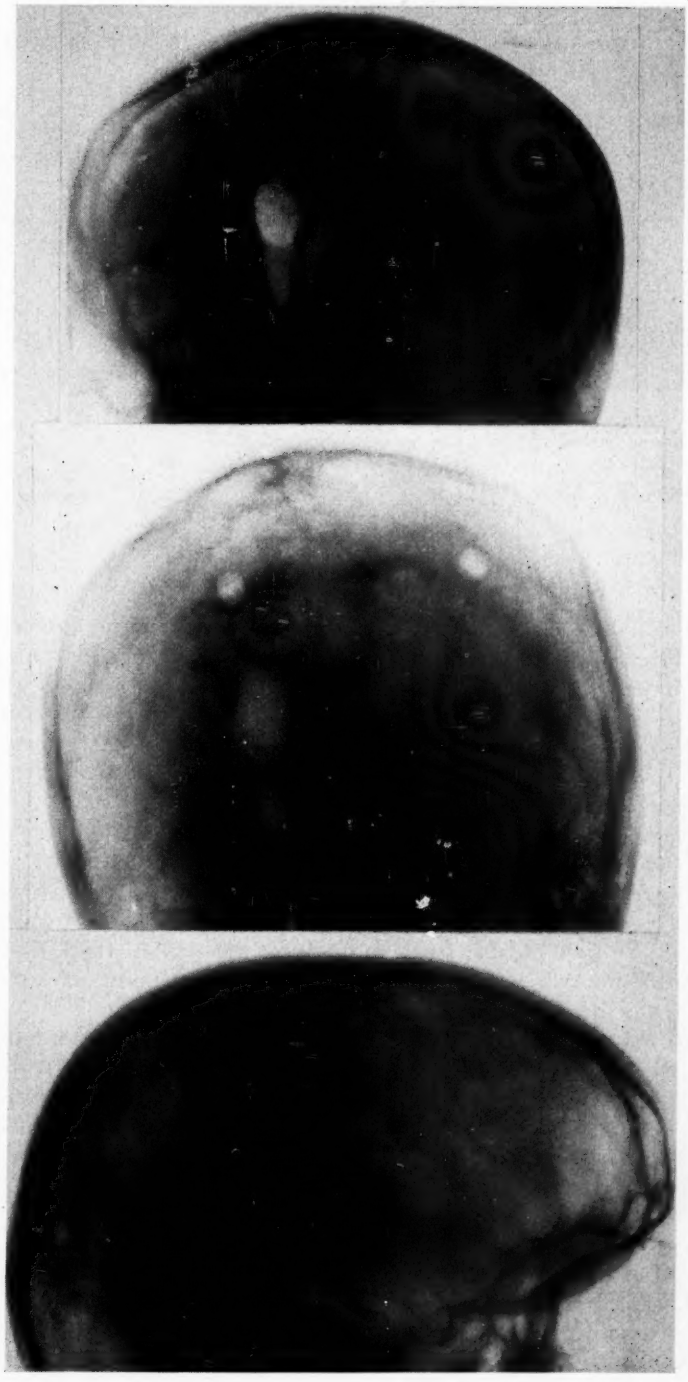

Fig. 1. Anteroposterior ventriculogram showing the displacement toward the left of the lateral ventricles and the compression of the right ventricle. Glioma is observable in the central portion of the right cerebral hemisphere. (By Dr. José Araujo G.)

Fig. 2. Posteroanterior ventriculogram showing the pushing back of the cerebral ventricles and septum lucidum toward the left by a central tumor in the right cerebral hemisphere. Above and on the sides the small holes of the trepanations through which the ventricular examination was made can be seen. (By Dr. José Araujo G.)

Fig. 3. Lateral ventriculogram showing the injected air occupying the different portions of the cerebral ventricles. A circumvolutional thinning of cranium (thinning of the bones of the skull) called digital impressions, a sign of intracranial hypertension, is noticeable. (By Dr. José Araujo G.)

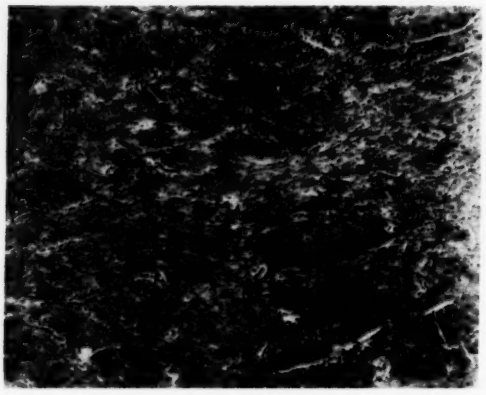

Fig. 4. Microphotograph of cerebral astrocytoma, showing general appearance of the neoplasm, with glioma of the fibrillar variety. (By Dr. Luis Benitez Soto.)

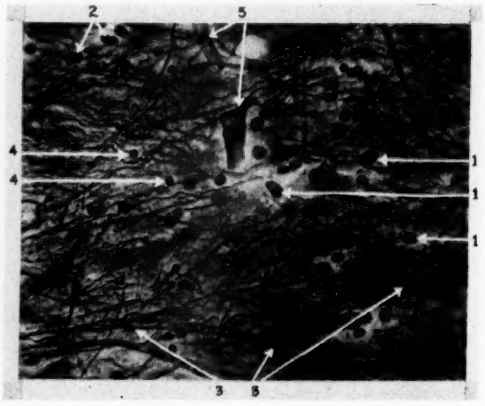

Fig. 5. Microphotograph of cerebral astrocytoma, showing (1) astrocytes with voluminous nucleus; (2) astrocytes of middle size; (3) neuroglia fibers; (4) lymphs; (5) blood vessels. (X675.) (By Dr. Luis Benitez Soto.)

duced us to classify the lesion as neoplastic. It was therefore a neoplasm; and, as it was formed of glias, was a glioma.

The nervous glia can schematically be divided into three groups, taking into consideration the cellular component which forms their units: (1) astrocytaria glia; (2) oligodendrocytaria glia; (3) macrogliocytaria glia. Theoretically, each one of these varieties is capable of giving rise to tumors of its own nature. In reality, only the first two are thus capable; in them originate the astrocytomas and oligodentrocytomas. The former are frequent; oligodendrocytomas are rare, usually being located in the cerebral hemispheres and attacking young people.

The cells that were found in the tumor were astrocytes; therefore we decided that it was an astrocytar glioma, or astrocytoma. The astrocytoma are schematically divided into two varieties, depending on whether cells or fibers predominate, whether the fibers are few or abundant. When the fibers predominate, it is a fibrillar glioma. The following are the characteristics found in astrocytoma, and in this case: (1) whitish color; (2) firm consistency; (3) compact appearance; (4) location in the base of the brain; (5) composition: astrocytar glia with abundant fibers, with an increase of glial and vascular elements.

SUMMARY

The above case was of interest because the patient appeared to have an intracranial ailment, in which the most prominent symptom was a painful crisis, leading to the possibility of an increase in the intracranial pressure, with bradycardia, easy vomiting spells, lipothymias and partial loss of consciousness. It is well to note that there were evident cerebellar symptoms, which might be interpreted as possible manifestations of momentaneous compression of the cerebellum across the tentorium. It is also interesting that the lumbar puncture did not reveal great hypertension; nevertheless, there were marked clinical manifestations such as intense papillar edema, hemicranea, vomiting, bradycardia, lipothymias, etc. This was undoubtedly the cause of the cere-

bral hernia after operation and of the death of the patient, with hyperthermia due perhaps to the lesions or modifications in the thermic centers of the base of the brain.

The pressure in the cerebral ventricle was high (24 cm.) on the Claude. The ventriculograms were of great value, because they confirmed the tumoral nature of the ailment, and also located it. The histologic study confirmed that it was a diffuse neoplastic process of a fibrillar glioma, impossible to operate upon because of its great size, deep location and marked vascularization. On the other hand, these neoplasms are not among those that show some regression through radiotherapy. It, therefore, was diagnosed as an astrocytoma, unextirpable and without possibilities of amelioration by radiotherapy.

RÉSUMÉ

Glioma central du cerveau

Le present cas était interessant parce que le malade semblait avoir une maladie intracranienne, dans la quelle le plus important signe était une crise douloureuse, qui faisait penser à la possibilité d'une acroissement de la pression intracranienne, avec bradicardie, faciles crises de vomissement, évanouissements et perte partiale de conscience. Il est bien de noter qu'il y avait des evidents signes cérébellares, qui pouvaient être interpretés comme des manifestations possibles de compression passegère du cervelet à travers le tentorium. Il est aussi interessant que la punture lombale ne révéla pas haute hypertension, mais que, cependant, il y avait des claires manifestations cliniques, comme intense édème pupillaire, emicranie, vomissement, bradicardie, lipothymies, etc. Ils étaient sûrement la cause de la hernie cérebrale après l'operation et de la morte du malade, avec hyperthermie due peut-être à les lésions ou modifications des centres thermiques de la base du cerveau. La pression dans les ventricules cérébraux était haute (24 cm. au Claude). Les ventriculogramms étaient de grande valeur, parce que ils confirmaient la nature tumorale du mal et aussi le localisaient. L'étude histologique confirma qu'il était un procès neoplastique répandu d'un glioma fibrillaire, qui, pour son grand volume, sa profonde localisation et sa marquée vascularization était impossible d'opérer D'autre partie ces néoplasmes ne sont pas de la nature de ceux qui montrent régressions avec les rayons X. Pour ça il fut diagnostiqué comme un astrocitome et il n'était pas extirpable et il était sans aucune possibilité d'améliorement avec radiotherapie.

ZUSAMMENFASSUNG

Zentrales Hirnglioma

Obiger Fall war von Interesse, da der Patient ein intercranielles Leiden zu haben schien, bei welchem das hervorstechenste Symptom ein Schmerzanfall war, welcher auf die Möglichkeit einer intercraniellen Drucksteigerung hindeutete, mit Bradycardie, leichten Brechanfällen, Ohnmacht und teilweisen Schwund des Bewusstseins. Es muss hervorgehoben werden, dass cerebellare Symptome vorhanden waren, die als mögliche Manifestation kurzdauernder Kompressionen des Kleinhirns, quer über das Tentorium, gedeutet werden konnten. Es ist weiters interessant, dass die Lumbalpunktion keinen stark erhöhten Druck ergab, dass nichtsdestoweniger ausgeprägte klinische Symptome vorhanden waren, wie Stauungspapille, halbseitiger Kopfschmerz, Brechreiz, Bradycardie, Ohnmacht, etc. Sie waren zweifellos die Ursache für die postoperative Cerebralhernie und den Tod des Patienten, mit Hyperthermie welche möglicherweise auf eine Verletzung oder Veränderung im Wärmezentrum an der Gehirnbasis zurückzuführen war.

Der Druck im Ventrikel war hoch (24 cm.) Die Ventrikulographien waren von grossem Wert, da sie den tumorartigen Charakter des Leidens bestätigten und den

Tumor auch lokalisierten. Der histologische Befund bestätigte auch, dass es sich um einen diffusen neoplastischen Prozess eines fibrillären Glioma handelte, welches wegen seiner Grösse, tiefen Lokalisation und starker Durchblutung eine Entfernung unmöglich machte. Andererseits neigen diese Neoplasmen nicht zu einer Regression mittels Röntgenbestrahlung. Darum wurde die Diagnose eines Astrozytoma gemacht, welches nicht extirpiert werden konnte und die Möglichkeit einer Besserung durch Röntgentherapie nicht bot.

RESUMEN

Glioma central del cerebro

El caso arriba mencionado llevó bastante interés porque el paciente parecía tener una condición intracranial, en la cual la síntoma mas sobresaliente era un crisis doloroso, que indicaba la posibilidad de presión intracranial mas grande, con bradicardia, vomitar fácil, liptotimias, y pérdida parcial de sentido. Debe notarse que había síntomas cerebélicas que podían interpretarse como manifestaciones de compresión momentanea del cerebelo a través del tentorio. Tambien es interesante notar que la puntura lumbar no mostró gran hipertensión, pero que no obstante tenía ciertas manifestaciones clínicas bien marcadas, tales como edema papilar intensa, hemicrania, vómito, bradicardia, liptotimias, etcetera. Esas fueron la causa de la muerte del paciente, y tambien de la hernia cerebral despues de la operación, junto con hipertermia debida a las lesiones o modificaciones de los centros térmicos en la base del cerebro.

La presión en el ventrículo cerebral fué muy alta (24 cm) en el Claude. Los venticulografos tenían gran valor porque confirmaron el carácter tumoral de la enfermedad, y tambien mostraron el lugar. El estudio histológico nos mostró que era un proceso neoplástico difuso de glioma fibrilar, el cual, por su gran tamaño, su locación tan honda, y su vascularización tan marcada, no era posible curar mediante operación. Al otro lado, estas neoplasmas no son los mismos que esas que muestran regresión mediante tratamiento por rayo X. Por eso, el diagnosis fué que era astrocitoma que no se podía extirpar y sin posibilidad de amelioración por radioterapía.

RIASSUNTO

Glioma centrale del cervello

Il presente caso era interessante perchè il paziente sembrava avere una malattia endocranica, in cui il segno più importante era una crisi dolorosa che suggeriva la possibilità di un aumento della pressione intracranica, con bradicardia, facili crisi di vomito, lipotimie e perdita parziale della coscienza. È bene notare che vi erano evidenti segni cerebellari, che potevano essere interpretati come manifestazioni possibili di compressione momentanea del cervelletto attraverso il tentorio. È anche interessante che la puntura lombare non rivelò grande ipertensione, ma che, ciò nonostante, vi erano chiare manifestazioni cliniche, come intenso edema pupillare, emicrania, vomito, bradicardia, lipotimie, ecc. Essi erano indubbiamente la causa dell'ernia cerebrale dopo l'operazione e della morte del paziente, con ipertermia dovuta forse alle lesioni o modificazioni nei centri termici della base del cervello. La pressione nei ventricoli cerebrali era alta (24 cm. al Claude). I ventricologrammi erano di gran valore, perchè confermavano la natura tumorale del disturbo e anche lo localizzavano. Lo studio istologico confermò che si trattava di un processo neoplastico diffuso di un glioma fibrillare, che, per il suo gran volume, la profonda localizzazione e la mancata vascolarizzazione era impossibile di operare. D'altra parte questi neoplasmi non sono della natura di quelli che soffrono regressioni per mezzo dei raggi X. Percio fu diagnosticato come un astrocitoma ed era inestirpabile e senza possibilità di miglioramento con radioterapia.

The Management of Patients with Diffuse Peritonitis

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IN February, 1935, as part of a study of appendicitis, I made a careful analysis of the cases of diffuse peritonitis caused by perforation of the appendix which had been treated in the Buffalo General Hospital and the Buffalo Children's Hospital during the previous five years. There were 44 such cases, and of these 20 had died—a mortality of 45.4 per cent. This proportion was a distinct surprise to me and seemed to demand serious study and effort to find some better way to handle such cases. Moreover, a review of the literature showed that this mortality rate of 45.4 per cent was more or less the average reported throughout the country.

In this series all but two cases were treated by six surgeons. They all used the chief methods available to combat the disease, namely, morphin, fluids, duodenal decompression and transfusion. There was, however, no unanimity of opinion as to the indication for their use and hence no uniformity of treatment. The question immediately arose, "Would not a more thorough appreciation of why patients die of diffuse peritonitis and of the proper indications for, and the use of, these therapeutic agents help lower this appalling mortality rate?"

The results of this study and of the application of the principles of treatment that logically followed were reported upon a year ago at the meeting of the American Medical Association in St. Louis. I wish here to lay before your consideration the routine that we now follow and report an additional series of cases treated since that time.

We fully appreciate that every case must be considered by itself, but we believe that we have developed a systematic plan embodying rational principles of treatment that is sufficiently flexible to allow for such variations as may be called for in any particular case. Every case in these series has been one of diffuse peritonitis caused by perforation of the appendix, definitely so proved either at operation or, in the fatal ones, at autopsy.

PATHOLOGICAL CHANGES

Our first problem was to determine why these patients die. Postmortem examination revealed with striking regularity the following conditions: (1) tremendous distention of the entire gastrointestinal tract, (2) high elevation of the diaphragm, (3) compression atelectasis of the lungs above the diaphragm, (4) terminal pneumonia, (5) marked stagnation of blood in the splanchnic and mesenteric vessels, (6) contraction of the spleen and (7) paleness and anemia of the liver. We feel that these observations point to the fact that such patients die primarily for two reasons: shock and intestinal obstruction.

These postmortem findings are readily correlated with the clinical picture. The patient with diffuse peritonitis entering the fourth or fifth day of the illness has a cyanotic hue of the lips and fingernails, a falling blood pressure and increased respiratory rate which are manifestations of the large

amount of blood stagnated in the splanchnic and mesenteric vessels and not available for the peripheral circulation. The rapid pulse is a compensatory effort of the heart to bring the blood which it is receiving in a markedly diminished amount to the tissues of the body. The hot, dry skin and parched tongue are evidences of marked dehydration.

The high elevation of the diaphragm and associated compression atelectasis are probably the chief factors in the production of the terminal pneumonia and are due to the tremendous distention of the entire gastrointestinal tract. As there is no evidence at autopsy of primary disease of the kidneys, the changes in the urine and blood must be attributed to dehydration. With these pathologic changes and this clinical picture in mind, our problem was to devise methods for combating the condition.

TREATMENT

Believing that the chief means available are, as before mentioned, duodenal decompression, parenteral administration of fluids, adequate and intelligent use of morphin and transfusion, we had to decide what each of these could be expected to accomplish and how they should be used. We have now worked out the following routine. By means of continuous duodenal decompression we attempt to diminish the distention, by removing gas and fluid from the stomach and intestines, and to overcome to some extent the high elevation of the diaphragm with the consequent compression atelectasis of the overlying lungs, thus removing one factor in the production of terminal pneumonia. As an additional aid, we believe the pelvis-low position obtained by raising the head of the bed on blocks is of value. We do not use the Fowler or sitting position, as we feel that is too tiring and often difficult to maintain. In addition, if we admit that an intestinal obstruction exists in every case, even though paralytic and not mechanical, we are to some extent combating the effects of a high intestinal obstruction.

In using duodenal decompression one must remember that the advance of the tube through the pylorus depends chiefly upon the peristaltic action of the stomach. If, therefore, one delays introducing the tube until gastric peristalsis is lost because of the infection and subsequent distention, there can be little hope of the tube's entering the duodenum; consequently there will be no real decompression of the small intestine. Another factor to be considered is that nausea and emesis vary with different individuals and that these symptoms should not be used as an indication for beginning decompression, one of the most important points in the proper use of which is its early application. To illustrate: In our experience one patient may complain of nausea and emesis with only 500 cc. in his stomach while another may tolerate 2,000 cc. with no complaints, the latter statement having been proved at autopsy.

By the parenteral administration of fluids, which in this type of case means intravenous drip, we endeavor to keep the patient as nearly as possible in physiologic balance, thus preventing or overcoming the effects of dehydration and keeping the blood chemistry and urine within normal limits. During the past few years we have been able to keep patients, even to the day of their death, with a normal urine as to chemistry and output and with normal blood values for urea, carbon dioxide combining power and chlorides. We endeavor to administer just sufficient fluid to maintain the blood chemistry and the urine within normal limits. The blood chlorides are used as an index of the type of fluid to be given. Only the amount of saline solution required to maintain the blood chlorides at a normal level is used, the remaining fluid needed being sterile distilled water. Early in our experience we occasionally produced edema by using more saline than was needed.

By the judicious use of morphin we hope first and foremost to relieve pain and thus keep the patient quiet and conserve his energy, to diminish peristalsis and thus in the earlier days of the disease perhaps help limit the spread of infection, but at all stages to increase the tone of the intestinal musculature and thus combat distention. The proper use of morphin is not as widely understood as it should be. So many factors enter into the determination of the proper dosage that its use should be carefully supervised. Although one must not overlook the possibility of a cumulative action, in our experience the error is more often underdosage than overdosage. If the drug is properly administered, after several large initial doses at comparatively short intervals the patient may need no more for six to eight hours. But he should not be allowed to come out from under its influence, and at the first sign of restlessness or complaint of pain its use should be resumed. It should not be ordered on any definite time schedule but used as indicated. It is only those who do not understand its action and its proper use who condemn morphin.

TRANSFUSION

Lastly, transfusion is a phase of this study which has proved most interesting and has led us to one or two observations which, as near as we are able to determine, have not been described before.

What are the indications for transfusion? The first is a slowly falling blood pressure associated with a gradually mounting pulse rate, regardless of the appearance of the patient. We have come to consider these signs as a warning that the patient is entering a condition of shock, with more and more blood stagnating in the splanchnic and mesenteric systems and less being fed to the heart for peripheral circulation. If it is to do any good, transfusion should be performed at this stage, before the blood pressure becomes imperceptible and the pulse uncountable and a true circulatory collapse occurs. By transfusion we increase the volume of the circulating blood, attempt to restore the blood pressure and supply blood to the peripheral tissues. The second indication for transfusion is a marked fall in the total white blood cell count. The explanation of this phenomenon is that that particular hemopoietic system is being overcome by the infection and its products and is failing to respond. Transfusion should be done at this time without delay and without waiting for any further developments. Otherwise the white blood cell count will continue to fall and the condition become beyond redemption. The bone marrow itself is evidently not primarily damaged, as is evidenced by its response to transfusion, but its function is temporarily suppressed and transfusion is a factor in stimulating it to renewed activity.

In certain cases of diffuse peritonitis we have observed a persistent leukopenia with a count ranging from 1,500 to 4,000 and with the appearance of an increased number of young forms, or a degenerative shift to the left such as occurs in other acute unfavorable infections. In these cases, regardless of how much blood is given, the blood picture does not return to normal until the patient has overcome the infection. We have given as much as 5,200 cc. of blood in five days with no change in the white cell or the differential count until the patient was on the road to recovery. We feel that this is a point in favor of the theory that the activity of the bone marrow is merely suppressed by the overwhelming infection and not primarily damaged. We also feel that these repeated blood transfusions have saved these patients.

We use from 750 to 1,000 cc. of blood for the average transfusion given indirectly. No ill effects from the administration of these large quantities of blood given at frequent intervals have been noticed. The

hemoglobin content, red blood cell count, icteric index, van den Bergh reaction and urine have remained normal.

Believing the foregoing observations and deductions to be correct, we formulated the following plan six years ago, in accordance with which all cases of diffuse peritonitis due to perforation of the appendix which came on our service at the Buffalo General Hospital and the Buffalo Children's Hospital have been treated. These cases have all been operated upon by one of three surgeons, each familiar with the standards set forth. In each instance the operative procedure was appendectomy with drainage. Our management of these cases has been as follows: No patient is sent to surgery until the shock, distention and dehydration are more or less successfully combated. We feel that by superimposing the shock of an operation, no matter how rapidly and gently it is performed, on patients already exhibiting to some degree the manifestations of shock, the mortality rate will be definitely increased. To correct these conditions will rarely defer operation more than two or three hours.

ROUTINE POSTOPERATIVE TREATMENT

When the patient is returned from surgery the following are done:

A hypodermic of morphin sulfate 0.015 Gm. is administered for pain, restlessness and nausea. This is repeated as often as necessary, the only contraindication being a respiratory rate of 12 or lower.

A continuous intravenous drip is instituted immediately, 10 per cent dextrose being alternated with 5 per cent dextrose in amounts to meet the individual requirements.

Duodenal decompression is inaugurated immediately.

The patient's blood is typed and cross agglutinated so that he may receive a transfusion without delay when the above-described indications arise.

A complete blood count and urinalysis are performed daily.

The blood pressure and pulse rate are taken every hour.

There are daily estimations of the urea content, the carbon dioxide combining power and the chloride content of the blood.

Fifty cc. of 50 per cent dextrose is administered twice daily in an attempt to get an additional 50 gr. of dextrose into the body every twenty-four hours as nutrition for the cardiac musculature.

The patient is placed in the pelvis-low position by elevating the head of the bed and nothing is administered by mouth.

These orders adequately take care of the routine procedures, and as the need for individual treatment arises, such as the use of oxygen, it can be ordered.

RESULTS

I am here reporting 77 cases of diffuse peritonitis treated as just outlined. Cultures of the peritoneal exudate were taken in 98 per cent of the cases. The various organisms reported were Bacillus coli, Streptococcus hemolyticus, Streptococcus fecalis, Bacillus aerogenes, Bacillus proteus and Staphylococcus aureus. It is interesting to note the comparative absence of anaerobic organisms, although definite attempts were made to demonstrate them in each instance. The pathologic reports confirmed the diagnosis of appendical involvement in all cases. The patients were ill at home before hospitalization an average of 70.3 hours. The physical examination in every instance confirmed the diagnosis of diffuse peritonitis. The average hospital stay of the patients who survived was 26.8 days.

I have outlined the requirements each case had to fulfill before inclusion in this series to show, if possible, that in each and every instance we were dealing with a patient with diffuse peritonitis due to perforation of the appendix.

In this series of 77 cases there were 9 deaths, representing a mortality rate of 11.8 per cent. One of these deaths, after an apparent recovery, was due to a volvulus necessitating a resection of three feet of small intestine. One patient bled to death from an erosion through a blood vessel in the cecum, although at autopsy his peritoneal cavity showed no evidence of peritonitis. The remaining 7 patients suffered no complications and died of peritonitis. All the patients were examined post mortem. Bacillus coli was reported seven times, Streptococcus hemolyticus once and Staphylococcus aureus once. Blood cultures were negative.

It is interesting to note that in the cases reported in 1935 the patients who died did so, on an average, only 4.2 days subsequent to operation. In this series the 9 patients who died, after being treated as outlined, lived an average of 13.8 days after operative intervention.

A compilation by Bower of the mortality rate in the United States for diffuse peritonitis following perforation of the appendix revealed an average mortality rate of 33 per cent. Lied's Clinic in Norway published a mortality rate of 27.39 per cent for the same condition.

CHEMOTHERAPY

During the past eighteen months it is only natural that in any discussion of this subject the question of specific chemotherapy should arise. By this I have reference to sulfanilamide. We now have a series of 15 cases in which sulfanilamide has been employed in conjunction with the therapeutic procedures mentioned. We have found that the addition of this drug to the therapeutic regime does not alter in any way either the eventual outcome or the course of the disease. In addition, it is entirely too dangerous a drug to be used empirically in a desperately ill patient, as one untoward manifestation of idiosyncrasy in an extremely ill patient may be sufficient to prove fatal. Whereas, this same untoward manifestation of idiosyncrasy in a comparatively well individual may not have the same dire conclusion. Consequently, the drug is administered only in those cases in which a known sulfanilamide-susceptible organism is demonstrable upon culture of the peritoneal exudate. In these cases an intravenous solution of 0.8 per cent of sulfanilamide in saline is administered.

The relatively small percentage of cases of diffuse peritonitis which are caused by conditions other than perforation of the appendix we treat along exactly the same lines, after the original cause of the peritonitis, such as a perforation of a viscus, has been corrected. This is done because all cases of peritonitis, regardless of the etiology, exhibit the same alterations in pathology and physiology.

We feel that in diffuse peritonitis of the so-called idiopathic type there may be a definite place for specific chemotherapy such as sulfapyridine. Our experience to date has been too limited to draw any definite conclusions. However, we have had occasion to observe four cases of proven pneumococcic peritonitis treated with sulfapyridine, all of whom made an uneventful recovery. It is interesting to note that previous to the advent of sulfapyridine our mortality rate in this type of case was 90 per cent. As mentioned before, while the number of cases is entirely too small to draw conclusions, we are here optimistic as to the eventual place of the drug.

CONCLUSIONS

To summarize—this work began in 1935, when a statistical and critical analysis of 44 cases of diffuse peritonitis operated upon in the Buffalo General Hospital and Buffalo Children's Hospital revealed (1) twenty deaths, or a mortality rate of 45.4 per cent, (2) that no uniformity of treatment existed and (3) that the patients who died had

undergone immediate surgery without any preoperative care as we now understand it.

A careful study at the autopsy table of all patients who died of diffuse peritonitis suggested that death was due to two factors, namely, shock and intestinal obstruction. Chemically, it was quite evident that insufficient attention was being paid to the manifestations of dehydration.

The various stages of the clinical picture were then correlated with these observations, and an attempt was made to construct a definite regime of treatment, sufficiently flexible for individual variations, which not only recognized these afore-described pathologic, physiologic and chemical changes, but actually anticipated them. The chief constituents of this therapeutic regime were: duodenal decompression, fluids, morphin and transfusion.

With continuous duodenal syphonage we feel that we are combating the effects of high intestinal obstruction, and preventing a compression atelectasis of the lungs due to the high elevation of the diaphragm.

With the parenteral administration of fluids all we hope to do is to meet the increased metabolic needs and thus keep the patient physiological.

Morphin is a two-edged sword. It may be either a definite adjunct to the treatment of diffuse peritonitis or a distinct danger.

The earliest drop in blood pressure and rise in pulse rate, in spite of the appearance of the patient, is interpreted as a grave prognostic omen and these signs are looked upon as a warning that the patient is slowly entering a condition of shock. This is the chief indication for transfusion. The development of a leukopenia with a degenerative shift to the left is another indication for transfusion. By transfusion for the first indication we hope to increase the blood volume, restore the blood pressure and supply blood for the heart to pump to the oxygen-starved peripheral circulation. By transfusion for the second indication, we hope to stimulate the suppressed bone-marrow activity and thus restore one of the chief infection-fighting elements of the body.

Sulfanilamide should not be used empirically, as it is too dangerous. Fifteen cases in which it was employed in conjunction with the other therapeutic procedures described shows that it did not alter either the course of the disease or the eventual outcome.

Sulfapyridine exhibits great promise in cases of so-called idiopathic peritonitis, particularly the penumococcic type.

I believe that by applying these principles, based on the anticipation of pathologic, physiologic and chemical changes, in a series of 77 cases of diffuse peritonitis subsequent to perforated appendicitis, comparable in every respect to those reported in 1935, we have reduced our mortality rate from 45.4 to 11.8 per cent.

SUMMARY

Death in diffuse peritonitis following rupture of the appendix is attributed to (1) shock and (2) intestinal obstruction associated with dehydration.

The therapeutic regime herein described consists in duodenal decompression, administration of fluids (not in excess of the body needs) and morphin (intelligently used) and transfusion. An early drop in blood pressure with a rise in pulse rate warns of impending shock and is the chief indication for transfusion.

With this regime, the mortality rate in 77 cases was 11.8 per cent as compared with a rate of 45.4 per cent in the same kind of cases before the regime was adopted.

Sulfanilamide is of no material benefit and constitutes an element of danger. In the so-called idiopathic peritonitis, sulfapyridine gives great promise.

RÉSUMÉ

Le traitement de la péritonite diffuse

La mort dans les cas de péritonite diffuse consécutive à la rupture d'un appendice est

attribuée aux: 1°. choc; 2°. l'obstruction intestinale associée à la déhydratation. L'auteur recommande la décompression duodénale, l'ingestion de fluides (en rapport avec les besoins du corps), l'emploi de la morphine (intélligemment) et la transfusion.

La chute de la pression sanguine avec grande rapidité du pous indique la transfusion. Soixante-dix-sept cas donnèrent une mortalité de 11.8%. Avant l'adoption de ce régime la mortalité était de 45.4%. Le sulfanilamide n'a aucune valeur dans le traitement de la péritonite diffuse et présente des dangers. Dans la péritonite idiopathique, la sulfapyridine promet.

ZUSAMMENFASSUNG

Regime für Behandlung diffuser Peritonitis

Tod bei diffuser Peritonitis nach einem perforiertem Appendix wird zweierlei Ursachen zugeschrieben:

(1) Shock.
(2) Intestinaler obstruction und Dehydrierung.

Die Behandlung, die hier beschrieben wird besteht aus Duodenaler Decompression, Fluessigkeitszufuhr (Nicht mehr als der Koerper braucht) und Morphine (intelligent verordnet) und Bluttransfusion. Ein fruehzeitiges Sinken des Blutdrucks mit Ansteigen der Pulszahl dient als Warnung vor Shock und als Indikation zur Bluttransfusion. Mit diesem Régime war die Mortalitaet in 77 Faellen 11.8% im Vergleich zu 45.4% von gleichen Faellen bevor dieses Régime eingefuehrt wurde.

Sulfanilamide bietet keinen besonderen Vorteil und hat Gefaehrliche Wirkungen. In der sogenannten "idiopathischen" peritonitis ist sulfapyridine vielversprechend.

RESUMEN

Proceder á seguir en los enfermos con peritonitis difusa

Muerte en la peritonitis difusa siguiendo rotura del apendice es atribuida á (1) shock y (2) obstrucción intestinal asociada con deshidratación.

El régimen terapéutico descrito aquí consiste en decompresión duodenal, administración de fluídos (no en exceso de lo requerido por el organismo) y morfína (usado inteligentemente) y transfusión. Una caida temprana de la presión arterial con una subida de el pulso indica la aproximación de el shock y es la indicación principal para la transfusión. Con este regime el porciento de mortalidad en 77 casos fue de 11.8 por ciento. Comparado con una cifra de 45.4 por ciento antes que este régimen fué adoptado en la misma clase de casos.

Sulfanilamida no es de un beneficio natural y constituye un elemento de peligro. En los así llamados peritonitis idiopaticas, sulfapiridina da grandes promesas.

RIASSUNTO

Maneggio dei pazienti con peritonite diffusa

La morte nella peritonite diffusa in seguito a perforazione dell'appendice e' attribuita (1) a shock ed (2) ad ostruzione intestinale. Il regime terapeutico qui descritto consiste nella decompressione intestinale, somministrazione di liquidi (non piu di quanto il corpo ne ha bisogno), morfina (usata intelligentemente) e trasfusioni. Un abbassamento prematuro della pressione del sangue con un rialzo del polso avvisa un imminente shock ed e' l'indicazione principale per una trasfusione. Con questo regime la mortalita' su 77 casi fu del 11.8% da paragonarsi con il 45.4% nello stesso tipo di casi, prima che questo regime fosse adottato.

"Sulfanilamide" non e di alcun valore benefico e costituisce un elemento di pericolo. Nelle cosidette peritoniti idiopatiche, "sulfapyridine" da grandi promesse.

Surgical Elongation of the Kinesiologic Hip Lever in Partial Paralysis

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LITTLE confusion exists as to the importance of the leverage action of the olecranon process in the kinesiology of the elbow and the arm. Active extension of the elbow joint is produced wholly from the pull of the triceps muscle upon this bone structure, which acts purely as a lever. The influence of function by the lever at the hip (head-neck-great trochanter) is of greater importance and identical in mechanical principle to that of the olecranon process. Few practitioners have appreciated the importance of this fact. The pathology, weight-bearing stability and function of the hip joint is markedly influenced by the mechanical balance between the length of this lever and the strength of the muscles pulling upon it. No suggestions in the literature have ever been made to modify its length surgically when the necessity was evident, either from partial paralysis of its attached muscles, or because of its shortening.

In a newly surgically made hip joint, a postoperative dislocation may occur because of the inadequate length of this lever. The pelvis may tip upward, or the femur may pull inward in adduction, with varying resultant practical shortening of the limb or weight-bearing weakness with a marked limp. Such limp often has been misunderstood for that of a limb shortening, and many patients have been referred with the request that the limb be lengthened, when there was little or no actual bony shortening of the limb. The real therapeutic indications were the restoration of proper kinesiologic balance of the hip.

The importance of the lever at the top of the femur is greater than that of the elbow because the olecranon process functions only to enable active extension of the forearm, whereas the bony lever at the hip is the essential element in providing a mechanical mechanism for lateral, flexo-abduction and dorso-abduction, inward and outward rotation of the lower limb, the stabilization of the hip joint and the active control of the weight-bearing relationship between the femur and the pelvis. The triceps is the only muscle inserted into the olecranon process, whereas seven muscles are inserted into the outer end of the lever at the hip, namely, *gluteus medius, gluteus minimus, obturator externus, pyriformis, gemellus superior, obturator internus and gemellus inferior.* With the exception of adduction, all movements at the hip are controlled by the pull of the muscles inserted to the outer end of this lever or the trochanter minor.

Just as in industry, or in every-day life, if the force available to be directed upon the end of a lever is inadequate, and it cannot be increased, then the only other recourse remaining is to elongate the lever so that the same available force will be adequate to the lifting of the corner of a building, or a rock, as it may be. This same principle has been applied in the case of both the olecranon process and the lever at the top of the femur, *i.e.*, to lengthen these structures to the anatomic dimension when they have been shortened by disease, by trauma, by inadequate development, etc. In these instances, it is assumed that the muscle force

is physiologically normal. On the other hand, when the muscle forces which normally activate these levers have been weakened from any cause whatsoever, particularly infantile paralysis, then it follows by the same token, that the elongation of these lever structures beyond their anatomic normal dimension is equally indicated. The results obtained by such surgical procedure have been most gratifying.

In cases of infantile paralysis, one would immediately deduce that the lever would be of normal physiologic length, but surprisingly this has not been found to be the case. The weakening of the attached trochanter muscles in a growing child results in diminished development of the whole upper end of the femur, including the longitudinal diameter of this lever. Therefore, the indications for its elongation are double, namely, the muscle force which activates it has been lessened below functional capacity, and, at the same time, the lever has become shortened from failure of development.

Weight-bearing and abduction function for our purpose should be divided into straight abduction, flexo-abduction and extenso-abduction. To increase flexo-abduction power, the hip lever should be lengthened laterally and anteriorly, and for weakened extenso-abduction, the lever should be lengthened outwardly and posteriorly. The latter brings about a vicarious action of all abductors toward extensor function. The same is true when the lever is elongated anteriorly, as well as laterally, since it increases the functional strength of the flexo-abduction. The results of elongating this lever under such conditions have, in many cases, been brilliant. The availability of bone graft material is almost a determining factor in the design of the special technic.

The desire is to employ a massive graft which will not only serve eventually to fuse in place and reconstruct the lever, but will also immediately elongate the lever in any desired direction by its mass support. A strong shell of bone obtained from the superior and outer surface of the greater trochanter, about four and one-half inches long, one and one-half inches wide and five-eighths inches thick, with the muscle insertions undisturbed, is turned outward and held in that position by a bone graft of adequate dimension (Fig. 1).

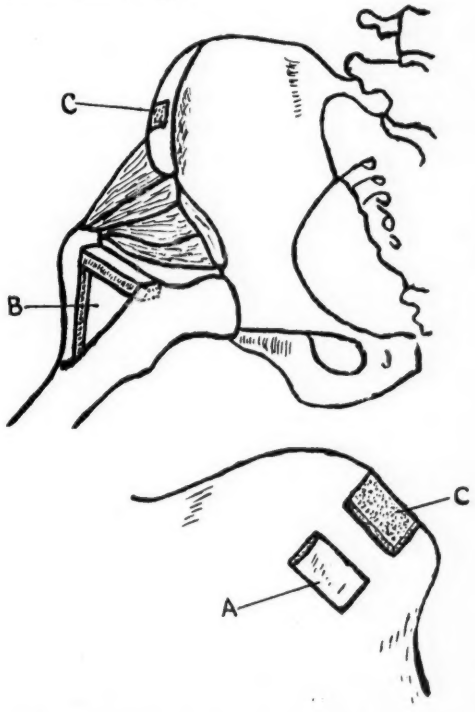

Fig. 1. Illustration showing method of elongating the kinesiologic lever at the top of the femur in cases of weakness of abductor muscles, whether from infantile paralysis or other causes. A rectangular shaped graft *(a)* is obtained from the crest of the ilium at *(c)*, including a part of the crest and as much of the outer table of the ilium as is found desirable. This is placed at *(b)*, and its ends are inlaid into the contacting bone so that it firmly holds the outer shell of the great trochanter in the desired position. Care should be taken not to sever or traumatize the trochanteric muscles at their insertions in freeing the top and outer portion of the great trochanter.

Other cases in which this technic has been applied with excellent results have been that of shortening of the neck of the

femur from destructive lesions, such as tuberculosis, where the disease has become cured, leaving hip motion and a markedly short neck of the femur, or in cases of old reduced congenital dislocation of the hip, with the same result. Many of these cases, because of long-continued abductor embarrassment, have developed marked adduction deformities, with the resultant practical shortening. Particularly in the case of the healed tuberculous hip, past teaching has been either a correction in the adduction by Gant's osteotomy, or a correction at the hip joint supplemented by a fusion operation. In most instances, the latter destructive operation with loss of motion was found necessary because repeatedly the adduction would slowly recur following Gant's osteotomy. The reasons for this were neither analyzed nor explained.

The outstanding feature of these cases has been the shortening of the lever at the top of the femur. The adductor muscles function with their normal mechanical advantage, at the same time that their antagonistic muscles are markedly handicapped, in that they are pulling upon a bone lever which may be shorter than one-half of its anatomic length. It is not surprising, under these conditions, that the correction of an adduction deformity by osteotomy at the lesser trochanter should recur. The indications in such cases are to correct the deformity and then to restore the abductor bone lever to its normal dimension, or even to greater length. In some of these cases, of both congenital and pathologic origin, there has been found at operation a bone block of the superior periphery of the hip joint, which had to be removed at the same time that the lever was lengthened, in order to allow freedom of the hip joint motion, particularly in abduction.

Another important indication for this type of surgical reconstruction is that in the case of arthroplasty, in restoring motion to a stiff hip joint, where this lever has been shortened both by the destructive lesion which produced the ankylosis and by the necessary removal of bone by the surgeon in modelling the new joint. In this instance, in the discretion of the surgeon, the lever may be lengthened at the primary arthroplastic operation to restore motion, previous to it, or it may be less advantageously deferred to a later date.

In the instance of the ununited fracture of the neck of the femur, the removed head of the femur transformed into a wedge serves this purpose admirably. Formerly the femoral head was thrown away and numerous small fragmented bone grafts were used to fill in the wedge cavity produced. Now the femoral head is shaped into the form of a wedge, using the motor-saw and broad osteotome for this purpose. This massive wedge, when properly placed, immediately supports the lever in its elongated state and serves forthwith to prevent the dislocation of the newly formed femoral head from the acetabulum. Because of its extensive mass it allows ample leeway in shaping the desired size of wedge and, therefore, only three weeks of postoperative immobilization is necessary. Because of the short period of immobilization, free joint motion is more easily restored.

TECHNIC

A skin incision about four inches long is made directly over the anterior surface of the great trochanter. A thin, sharp, one-half inch osteotome is driven into the great trochanter about three-fourths of an inch below its tip and at right angles to the axis of the femur. This is held in place, without withdrawing, by an assistant, while the posterior corner of a thin osteotome, one and one-half inches long, is contacted with the anterior surface of the trochanter at its outer edge and with the one-half inch osteotome still firmly in place. Then, the wide osteotome is driven obliquely downward

and backward into the substance of the trochanter, separating a shell of bone from the outer portion of the great trochanter about five-eighths of an inch thick and four and one-half inches long. These bone incisions are in the shape of an inverted "L." The shell of bone, with practically all of the insertions of the abductor and weight-bearing muscles, is broken by a greenstick fracture at its extreme lower end, and forced outward at its upper end, with the wide osteotome used as a lever against the resistance of the uncut soft structures near the bone. Care is taken to keep the osteotome posterior to the external circumflex artery and not to cut it. The angle thus made between this bone shell and the rest of the trochanter is about 40°.

A skin incision about two and one-half inches long is then made over and parallel to the crest of the ilium. The crest and contiguous area of the outer surface of the ilium is laid bare. With motor-saw and osteotome, the crest is split, separating its outer half as well as the outer table of the ilium, forming a rectangular or square-shaped graft of correct dimensions, about one and three-fourths by one and one-half inches. A groove to receive an iliac graft is made in the outer cut surface of the trochanter opposite the angle in the bone shell where the head of the "L" joins its stem, while the upper end of the bone shell fragment is forced outward. Thus the maximum of the dimensions of the proposed graft is obtained (see Fig. 1). The iliac graft is then placed as a prop and supports the trochanter lever and fixes the shell of bone in its outwardly placed position.

The plan of operation in paralytic cases should, by all means, disturb the weakened muscles as little as possible where the graft is obtained at the crest of the ilium just posterior to the anterior-superior spine. The graft is pushed posteriorly into position while the upper end of the bone lever is held outward. It is placed at right angles to the trochanter and into the groove already made in the outer cut surface of the trochanter and the angle made in the inner surface of the bone shell by the "L" cut, when forming it.

Care is exercised at all times not to injure or separate any of the seven muscles inserted into this bone shell, which is displaced outward. No internal sutures are necessary to hold the graft in place. The soft parts are approximated by a continuous suture of No. 1 chromic catgut and the skin with a continuous locked suture of plain No. O catgut. The limbs are placed in a double plaster-of-Paris spica in moderate abduction for a period of four weeks.

SUMMARY

In cases of shortening of the neck of the femur from ancient cured disease or congenital dislocation or malformation, or from former arthroplasty where this lever has been shortened, both from the destructive lesion that produced the tuberculosis of the bone, and from the removal of bone by the surgeon, made necessary in modelling a new joint, the bone-graft material can be obtained from the side of the ilium, always high up at the crest, so as not to disturb either the muscular structure or its elevation. It can also be obtained from the anterior internal surface of the tibia, the most satisfactory storehouse of bone-graft material. At the discretion of the surgeon, this lever may be elongated before or during the primary operation to produce motion in a bony stiff joint. In this instance, the side of the ilium already has been laid bare and, therefore, the material for the elongation of the lever can be easily obtained.

The graft of desired dimensions is obtained in the shape of a square or a rectangle from the outer table of the ilium, including the outer half of the crest. This is placed in and immediately supports firmly the lever in the elongated state.

The technic for infantile paralysis cases or where there are other causes for the

muscles being weak is precisely the same, except that in this instance the lever is supposed to be of anatomic length. The purpose is to elongate it beyond its anatomicophysiologic length or to afford weakened muscles a greater advantage than they have normally. The extreme anterior portion of the border of the ilium is chosen for the purpose of disturbing the weakened muscles as little as possible.

Following the removal of the cast, amply well-supervised physiotherapy and muscle training of the involved muscles and joints must be carried out in every case.

RÉSUMÉ

Elongation Chirurgicale du Levier Chinesiologique de la Hanche dans la Paralysie Partiale

Dans les cas de raccourcissement du cou fémorale pour anciennes maladies gueries ou par luxation congenitale ou par malformation ou par precedente arthroplastique, lorsque ce levier ait été raccourci, soit par la lesion destructive qui produit la tubercolose de l'os, soit par la rémotion d'os faite par le chirurgien necessairement en modellant une nouvelle articulation, le materiel pour la greffe d'os peut être obtenu de l'ilium toujours en haut près de la crête, pour ne pas déranger la structure musculaire ou l'élévation de l'os. La greffe peut aussi être obtenue de la surface antero-interne de la tibia, le magasin le plus satisfactoire de materiel pour greffe d'os. Ce levier peut être élongé avant ou pendant l'operation principale, à la discretion du chirurgien, pour produire le mouvement dans une articulation osseuse rigide. Dans ce cas le bord de l'ilium a été déjà denoué et pour ça la matière pour l'élongement du levier peut être obtenue facilement.

La greffe de dimension désirée peut être obtenue dans la forme d'un carré ou d'un rectangle de la table esterne de l'ilium, eny comprenant la moitié esterne de la crête. Cette greffe est mise en place et immediatement soutient solidemment le levier qui a été élongé. La technique pour la paralysie infantile ou pour autre cause de débilité musculaire est précisemment la même ,excepté que dans ce cas on suppose le levier soit de longeur anatomique. Le but est de l'élonger au delà de sa longeur anatomophysiologique ou de donner aux muscles débilités un plus grand avantage qu'ils n'aient pas normalement. L'extrème partie anterieure du bord de l'os iliaque est choisie avec le but de déranger les muscles affaiblis moins qu'on peut après que la moule a été enlevée on doit commencer dans chaque cas et amplement physiotherapie bien surveillée et exercise des muscles malades et des articulations.

ZUSAMMENFASSUNG

Uber die chirurgische Verlängerung des kinesiologischen Hüftgelenkshebels bei partieller Lähmung

Im Falleder Verkürzung des Femurhalses, welche als Folge einer alten geheilten Erkrankung, einer angeborenen Dislocation, einer Missbildung, oder einer vorhergehenden Gelenksplastik, wo dieser Hebel verkürzt wurde, hervorgerufen wurde, sowohl durch den zerstörenden Process welcher Knochentuberkulose hervorrief, als auch durch die Entfernung des Knochens durch einen Chirurgen welche für die Herstellung eines neuen Gelenkes nötig war, kann das Material zur Knochentransplantation von der Seite des Ileum genommen werden, immer von weit oben an der crista, um weder die Muskulatur noch deren Elevation zu stören. Es kann auch von der vorderen Innenfläche der Tibia genommen werden, dem bestgeeignetsten Depot für Knochentransplantations material. Nach Ermessen des Chirurgen, kann dieser Hebel vor oder während der einleitenden Operation verlängert werden, um in dem Knochen ver-

steiften Gelenk, Beweglichkeit hervorzurufen. Da in diesem Falle die Seite des Ileum ohndies schon blossgelegt wurde, ist das Material zur Verlängerung des Hebels leicht erhältlich.

Ein Transplant in der gewünschten Grösse ist, in Form eines Quadrates oder Rechtecks, von der Aussenfläche des ileum einschliesslich der äusseren Hälfte der crista erhältlich. Dieses wird eingefügt und unterstützt sofort fest den Hebel in dem verlängerten Zustand.

Die Technik bei Kinderlähmung oder bei aus anderer Ursache schwachen Muskeln, ist genau die gleiche, ausser dass in diesem Falle der Hebel von anatomischer Länge sein sollte. Der Gedanke ist, ihn über seine anatomisch-physiologische Länge hinaus, zu verlängern oder geschwächten Muskeln eine grössere Möglichkeit zu geben als sie auf normalem Wege hätten. Um den geschwächten Muskel so wenig als nur möglich zu stören, wird der äusserste vordere Anteil der Ileumkante gewählt. Nach Entfernung des Verbandes, muss Physiotherapy unter strenger Aufsicht und Muskelübung der beteiligten Muskeln und Gelenke, in jedem Falle angewendet werden.

RESUMEN

Extension Quirurgica de la Palanca Cinesiológua de la Cadera en Casos de Parálisis Parcial

En casos donde el cuello del femur se ha hecho corto a causa de una enfermedad vieja curada, de dislòcación o malformación congénita, o de artroplasty anteriormente hecho cuando ha sido cortado esa palanca por la lesión que produjo el tuberculósis del hueso más el pérdido de hueso hecho necesario en la formación de la articulación nueva, la materia puede obtenerse del ilio cerca de la corona para que no se estorben ni la estructura de los músculos ni la elevación. También puede obtenerse de la superficie anterior interna de la tibia. Segun cree el cirujano en cada caso, esa palanca puede alargarse antés de o durante de la primera operación para dar movimiento en una articulación rígida de hueso. En tal caso, como que el ilio ya ha sido expuesto, la materia que sea necesaria para el alargamiento de la palanca puede obtenerse facilmente.

El injerto del tamaño deseado se obtiene en forma de cuadra o de rectángulo de la mesa exterior del ilio, incluyendo la mitad exterior de la corona. Esto se pone dentro de y apoya directamente la palanca en estado alargado.

Es precisamente semejante la técnica en casos de parálisis infantil u otros causas de debilidad de los músculos, salvo que en tal caso debe ser de largo anatómico la palanca. En este caso la operación está hecha para hacerlos más largo de lo que as normalmente o para dar a los músculos debiles una ventaja más grande de la que ordinariamente tienen. La parte anterior de la extremidad del ilio se escoge para no estorbar los músculos debiles.

Después de que se quita la forma, fisioterapía bien arreglada y enseñanza de los músculos y articulaciones afectadas deben hacerse en todo caso.

RIASSUNTO

Allungamento Chirurgico Della Leva Cinesiologica Dell'anca Nella Paralisi Parziale

In casi di accorciamento del collo femorale da malattie antiche curate o da lussazione congenita o da malformazione o da precedente artroplastica, qualora questa leva sia stata accorciata, sia dalla lesion distruttiva che produsse la tubercolosi dell'osso, sia dalla rimozione di osso fatta dal chirurgo necessariamente nel modellare una nuova articolazione, il materiale per l'innesto osseo si può ottenere dall'osso iliaco, sempre piuttosto in alto verso la cresta, in modo da

non disturbare né la struttura muscolare né la sua elevazione. Si può anche ottenere dalla superficie antero-interna della tibia, la riserva più soddisfacenta di materiale per innesto osseo. Alla discrezione del chirurgo, questa leva può essere allungata prima o durante l'operazione principale per produrre il movimento in un'articolazione ossea rigida. In questo caso il lato dell'osso iliaco é stato già denudato e perciò il materiale per l'allungamento della leva può essere ottenuto facilmente.

L'innesto delle dimensioni desiderate si può ottenere nella forma di un quadrato o di un rettangolo dalla tavola esterna dell'osso iliaco, includendo la metà esterna della cresta. Questo é posto in situ e immediatamente sostiene saldamente la leva che é stata allungata.

La tecnica per la paralisi infantile o per altra causa di debolezza muscolare é precisamente la stessa, eccetto che in questo caso la leva si suppone sia di lunghezza anatomica. Lo scopo é di allungarla al di là della sua lunghezza anatomo-fisiologica o di dare ai muscoli indeboliti un maggior vantaggio di quel che non abbiano normalmente. L'estrema parte anteriore del margine dell'osso iliaco é scelta con lo scopo di disturbare i muscoli indeboliti meno che é possibile. Dopo che l'ingessatura é stata tolta, si deve cominciare in ogni caso e ampiomente fisioterapia ben sorvegliata e allenamento dei muscoli colpiti e dell'articolazioni.

INTERNATIONAL CREDENTIALS

The Credentials booklet has been sent to every Associate Member, Member and Fellow recently. Those, who, through an inadvertence, have not received same will please notify Dr. Charles H. Arnold, 941 O Street, Lincoln, Nebraska.

One of the principal purposes of this Credentials booklet is to assist particularly the Associate Members and Members in affording them a proper introduction and acquisition of additional knowledge. It is hoped that the holders of these Credentials will take advantage of the opportunities offered thereby.

It is needless to emphasize that young men are urged to take advantage of the facilities offered by regularly established postgraduate medical schools and where postgraduate courses are offered in various institutions. The uniqueness of the Credentials booklet, it is hoped, will aid in offering further opportunities for the pursuit of postgraduate training.

Surgery in the Mentally Ill*

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WE all know that the history is a most important factor in the diagnosis of any medical or surgical patient. This is especially true in psychotic individuals, who are usually unable to give any subjective symptoms. Usually the first indication of an acute illness in these patients is detected by observing some abnormality in their behavior, which is often several hours after the onset of the illness. They do not complain of pain or nausea, nor is their posture or facial expression suggestive of discomfort. Their mental disability predominates, to a greater or lesser degree masking most physical abnormalities which they experience. Often they eat their meals and conduct themselves in their usual manner only a few hours prior to their death.

The objective as well as the subjective symptoms are often absent or, if present, misleading. Examination of the abdomen in acute abdominal conditions usually does not show the tenderness, rigidity, distention and other cardinal symptoms that one usually finds in the normal. The symptoms which are wholly or in part under reflex control are frequently abnormal, although the rigidity of perforation of the intestines or spreading peritonitis is usually present to some degree. Rarely do these patients present the expected picture of shock; for the most part, the temperature, pulse, respiration, blood count and urinalysis are of little diagnostic value. In other words, the history usually amounts to some attendant's having found the patient not behaving in his usual manner during the past twenty-four hours.

We have tried during the last four or five years to remedy this by (1) a good history and physical examination on admittance; (2) examination by the surgical staff of all questionable surgical cases; (3) examination of all patients every six months; and (4) instructions to nurses and attendants to notice lumps, swellings, sores and other abnormalities while bathing the patients.

Our next important problem is permission to operate when we deem it necessary. As you all know, in an institution of this kind the person responsible for giving permission usually lives at some distance and is difficult to contact. However, if all attempts to get permission to operate fail, and we find it is absolutely necessary, we do so without permission. This is done as a life-saving measure, the administration of this hospital being absolutely against operation without permission except in very urgent cases.

The general condition of the patient is another very important problem in the state institution. Up to five or six years ago East Moline State Hospital had a great deal of pellagra and scurvy. Inmates at the present time, however, have a well-balanced diet prepared by a dietitian. Nevertheless, proper care and feeding of patients in an institution do not necessarily make them a good risk. As we all know, they are not active and they do not use their muscles, and I have noted that most of them bleed very little following the initial incision; it is seldom necessary to use more than two or three hemostats in an abdominal incision.

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In other words, the tonicity of the patient in an insane institution is poor. The skin itself is often contaminated from excretions even though the patient is bathed regularly; this in itself would increase the risk of wound infection.

In this institution, after the patient has been studied by the resident staff, we are called in to review the case with the entire staff. We frankly discuss the possible diagnoses and the mental condition of the patient and we insist that each member of the staff express his opinion as to the diagnosis and best method of treatment. We have found that by this procedure we not only obtain the counsel of the older members of the staff as to the probable postoperative problems as far as the mental condition of the patient is concerned, but we can also teach the younger members of the staff surgical principles which they are very eager to learn, since here the proportion of surgical patients to the total number of patients is very low.

POSTOPERATIVE CARE

The postoperative care of an institution patient has many pitfalls. Other surgeons who have written on this subject seem to have had very little trouble; this, unfortunately, has not been our experience. While it is unnecessary in most cases to use much morphine, since these patients usually are quiet for long periods with no narcotic at all, this does not mean that they do not have to be watched every minute. We will cite a few unfortunate accidents which bring out this point.

One day we operated on a patient who was jaundiced from a common duct stone. The stone was removed, a tube was put into the common duct, another tube was put into the gallbladder, which was drained, and a third tube was put in front of the gallbladder. The same day we operated on a patient who had perforated intestines from eating bones. After using suction in her abdomen we put a drain tube in her cul-de-sac. On the second day I called to see the two patients and found that all tubes had been pulled out of them both. Strange as it may seem, they both made uneventful recoveries, even though the patient with the common duct stone did drain bile for two or three weeks following the operation. This case made we wonder whether it is necessary in our private surgery to drain the common bile duct as long as we do.

In another case, that of a chronic alcoholic, we sewed up a perforated duodenal ulcer. He did well; however, on the second night, one of the patients near his bed gave him a big chew of tobacco, which he promptly washed down with 1,000 cc. of his Murphy drip.

In a colored patient with dementia praecox, we resected the cecum because of a thrombosis of the mesentery. We put a clamp on the end of the large intestine after cutting it off with cautery and sewed a tube into the open end of the ileum. These were left out on the abdominal wall and the patient did well for three days; the drainage was good and his condition was excellent. However, on that same day he got underneath his dressings, took hold of the clamp on the large intestines and jerked the intestines out of his abdominal cavity. He died later from shock. If I had this operation to do over again I would perform an anastomosis at the time of the operation and close the wound without drainage. I believe it is justified in an institution where an accident like this may happen to take a little more risk by doing the complete operation in one stage.

In a patient who had broken his shoulder following the shock treatment for dementia praecox, we obtained a fairly good functional result by putting his arm in an airplane splint. I did not believe that an open reduction was indicated in his case; however, his family was not satisfied and he was taken to Chicago, where an open

reduction was performed. Following the operation, while still in Chicago, he picked his wound open with a lead pencil. Of course he developed an infection and at present has an osteomyelitis which has given him a much worse shoulder than if he had not been operated upon.

We have been fortunate in the last two years to have studied five cases of perforated intestines, caused by swallowed bones—three cases at the State Hospital and two in private practice. I will group these cases, as they are interesting because of their similarity.

None of the five patients complained of sharp or excruciating pain at any time. None of them vomited. They all had rigid abdomens. In every one the tenderness was in the right iliac fossa, and none of them had a blood count of over 14,000. They were all operated upon. In all five there was no tendency to wall off the pathology. They all had a white, milk-like fluid, free in the abdomen. All of them had the perforation through the ileum within a foot and a half of the ileocecal valve. In four of the five cases the bone was removed and the intestine sutured; in the fifth the appendix was removed and the pathology missed. This patient expired and at autopsy the bone was found halfway through the intestines. The other four had uneventful recoveries, though one of the patients pulled her tube out, as mentioned above. These bones varied from one 3 inches long to a small triangular bone 1 cm. on the sides.

We have been treating tuberculosis surgically with such operations as phrenectomy, massive collapse, etc., just as is done in a tuberculosis sanitarium.

The subject of hernia comes up often in a state hospital. I believe that in an institution for the insane all hernias should be repaired, thus making it more comfortable for the patient to get about, relieving any irritation that the hernia may cause and also eliminating the possibility of strangulation, which usually is not found in these people until it is necessary to resect the intestines. We have operated on three feeble-minded patients for inguinal hernia. It was formerly thought that a hernia repair in the feeble-minded would not hold, but in these three the repair has not broken down.

MENTAL IMPROVEMENT

The next all-important subject in an institution for the mentally ill is to determine what good, if any, surgery does the individual's mental condition. I believe, first, that we can make a general statement that a patient with any degree of dementia has less than a 2 per cent chance of improvement by surgery. Under this group we can list (1) dementia praecox, (2) general paresis, (3) alcoholic psychosis, (4) epilepsy.

The high percentage of improvement in mental conditions following surgery is, of course, in pelvic operations on females. We know that women with pelvic lesions often have a well-marked chain of nervous symptoms, varying to such an extent that, if profound, the woman may be said to be insane. It is the experience of every surgeon that the removal of the lesion is followed in many cases by the disappearance of the nervous and mental symptoms. We also know that certain insane persons are more susceptible to external stimuli than normal individuals; it is logical, therefore, to believe that they are more susceptible to internal or somatic impulses and that if the source of the pathologic stimuli was removed, we might hope for improvement in the mental condition.

It is known that coincident with this mental improvement there is a physical improvement; for this reason we may assume that any procedure that improves the physical condition has an indirect effect on the psychosis. The following is a portion of a table taken from Taussig, in which the

author gives recoveries and improvements in female surgery reported both by others and by himself:

Author	*No. of Cases*	*Mortality*	*Improvement*
Rohe.....	34	....	56%
Hobbs.....	173	2%	68%
Henry.....	28	33%	57%
Mayo.....	60	....	16%
Broun.....	242	2%	18%
Taussig.....	17	....	17%
Gibson.....	100	1%	17%

Taussig comments: "It will be seen that the first investigators made rather fantastic statements, while there is a remarkable similarity in the results of the last four."

GOITER

Goiter and psychosis is another interesting subject, and one in which there are many pitfalls. In the Cleveland Clinic, out of 2,286 cases of toxic goiter there were only 24 cases, or less than 1 per cent, in which the psychosis was caused by a toxic goiter. The contraindications for surgery in a toxic goiter with psychosis are: (1) history of insanity in the family; (2) delusions; and (3) hallucinations. It is very difficult to determine whether to treat the psychosis. I believe if there is a question at all it is better not to operate. In an institution it might be permissible; in private practice, however, I have found it is not the wise course to take. I will cite two cases to illustrate this point.

A sufferer from dementia praecox, now in this state institution, came to my office and told me she thought that she was going insane and that she had just seen five doctors, who told her she must have her goiter removed immediately. Upon examination I found she had a toxic adenoma; her basal metabolism was plus 16 and her pulse was 120. I did a thyroidectomy and her physical recovery was uneventful. However, during her stay in the hospital, she informed me that there was a woman in black with a barbed wire around her neck who came in and rapped on her radiator to disturb her. At first I thought she was joking and let it go, but her mental condition became progressively worse; after a month's treatment at home she was put in the East Moline State Hospital and a diagnosis of dementia praecox was made.

Another patient also complained of going insane. She had lost her husband three months previously. She was very nervous, had exophthalmos, a basal metabolism of plus 20, a pulse of 112 and a marked tremor. The pathologic report after thyroidectomy was Graves' disease. Three weeks after the operation I was called by her neighbor to come quickly. I found her house all lighted and she madly calling out of a second-story window. There must have been fifty people around the house, and if there is any doubt in the minds of my readers as to how I felt walking up the stairs with my grip in my hand, they should be in the same position. This patient was diagnosed as a manic depressive and has periods when her mental condition is normal.

Brain surgery in the mentally ill, I believe, is accepted in (1) brain tumors, (2) brain abscesses and (3) brain trauma followed by Jacksonian epilepsy. It is questionable whether removing the white matter of the frontal lobe in dementia praecox or destroying the white matter in the frontal lobe by injections of different drugs, as is done in foreign countries, is advisable. We believe that the improvement obtained from these radical procedures is from shock. Possibly it may be the same as the shock obtained from insulin treatment; the result seems to be the same.

MORTALITY

The mortality following surgery in an insane institution seems to be a question for discussion. Most of the authorities claim that their mortality is no higher than it is in private practice. We cannot agree with this conclusion. The mortality in our private practice in major surgery is about 2

per cent; mortality at the state hospital runs somewhere between 10 and 16 per cent. I have tried to explain in this paper why the mortality is higher; however, it is significant to note that most of the statistics available are on female surgery.

In conclusion, we may state that we have seen mental improvement following surgery, but whether the improvement is permanent or due to surgical shock, we cannot be sure. Thorough care in surgery, as well as in other specialties, gives the patient every advantage and some hope of recovery.

SUMMARY

The first indication of illness in a psychotic patient is usually an abnormality of behavior. The mental disability predominates and masks most physical disabilities.

Postoperative care of these patients is hazardous; they may be quiet without morphine, but must be watched, for they often infect their wounds, pull out drains or otherwise injure themselves. One is usually justified in taking a little more risk in the first operation, rather than attempting to do it in stages. Tuberculosis in the insane has also been treated surgically, with phrenectomy and massive collapse. It is advisable to repair hernia in the mentally ill to relieve the possibility of strangulation, which is usually not found until it is necessary to resect the intestine.

In general, any patient with general paresis, alcoholic psychosis, epilepsy or dementia praecox has less than a 2 per cent chance of mental improvement by surgery. The highest percentage of mental improvement following surgery is in pelvic operations on the female insane; recent figures show a 16 to 18 per cent mental improvement following surgery in this group. The contraindications for surgery in goiter and psychosis are: (1) history of insanity in the family, (2) delusions, (3) hallucinations. Brain surgery in the mentally ill may be performed for: (1) brain tumors, (2) brain abscesses, (3) brain trauma followed by Jacksonian epilepsy.

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RÉSUMÉ

Chirurgie dans le malade d'ésprit

La première indication de maladie dans un psycopatique est d'ordinaire une abnormalité de la conduite. L'incapacité mentale prédomine et masque la plupart des incapacités physiques.

Le soin postoperatif de ces malades est hasardeux; ils peuvent rester tranquilles sans de morphine, mais ils doivent être surveillés, parce que souvent ils infectent leurs blessures, ils arrachent les drainages ou ils se font du mal autrement.

On est d'ordinaire justifié à prendre un risque un peu plus grand dans la première operation, plutôt que tenter de la faire en différentes périodes. Tuberculose aussi a été traité chirurgicalement dans l'aliéné avec phrénectomie et collapse massif.

Il est convenable de curer la hernie dans le malade d'ésprit pour éloigner la possibilité d'étranglement, qui d'ordinaire ne vient pas découvert jusqu'il est necessaire une résection de l'intestin.

En general chaque malade avec paralysie generale, psychose alcoolique, epilepsie ou démence précoce a moins que 2% de probabilité d'améliorer son état mental avec la chirurgie. Le plus haut pour cent d'amélioremente de l'état mental après operation on le trouve dans les operations pelviques de la femme aliénée. De recentes chiffres montrent qu'il y a un améliorement de 16-18% après operation dans ces cas. Les controindications à l'intervention dans le goître ou dans les psychoses sont: (1) histoire de maladies mentales dans la famille; (2) illusions; (3) hallucinations. Chirurgie cérebrale dans le malade d'ésprit peut être faite pour: (1) tumeurs cérebrales; (2) abscès cérebraux; (3) trauma cérebral souivi d'epilepsie jacksonienne.

ZUSAMMENFASSUNG

Chirurgie bei Geisteskranken

Das erste Krankheitszeichen bei einem geisteskranken Patienten ist gewöhnlich ein geändertes Benehmen. Die hervorstehende Geistesschwäche verhüllt das physische Krankheitsbild.

Die Postoperative Behandlung der Patienten ist gefährlich; sie können ganz ohne Morphium gelassen werden, doch ist Bewachung nötig, da sie oft ihre Wunden infizieren, Dränage herausziehen, oder sich auf andere Weise verletzen.

Man ist meist gerechtfertigt, eher bei dem ersten Eingriff mehr zu wagen, als zu versuchen die Operation in Stufen zu machen. Tuberkulose beim Geisteskranken wurde auch chirurgisch mittels Phrenectomie und massivem Kollaps behandelt.

Es ist ratsam, beim Geisteskranken bei Bruch zu operieren, um die Möglichkeit einer Einklemmung zu vermeiden, die meist erst zu einem Zeitpunkt entdeckt wird, wo es bereits nötig ist Darm zu resezieren.

In Allgemeinen, hat ein Patient mit allgemeiner Parese, alkoholischer Psychose, Epilepsie oder Dementia praecocs, weniger als 2 prozent Aussicht auf geistige Besserung durch die Operation. Der höchste Prozentsatz einer Besserung des Geisteszustandes als Folge eines chirurgischen Eingriffes, ist bei weiblichen Geisteskranken nach Unterleibsoperationen. Die neuesten Zahlen ergeben einen Prozentsatz von 16 bis 18% geistiger Besserung als Folge einer Operation an weiblichen Geisteskranken.

Die Kontraindikationen zur Kropfoperation bei Psychosis sind: (1) Anamnese von Geisteskrankheit in der Familie, (2) Wahn, (3) Halluzination.

Hirnchirurgie beim Geisteskranken kann vorgenommen werden bei: (1) Gehirntumor, (2) Gehirnabszess, (3) Gehirntrauma welchen Jackson Epilepsie folgt.

RESUMEN

Tratamiento quirurgico de los insanos

La primera indicación de enfermedad en un insano generalmente se ve en una abnormalidad de comportamiento. La enfermedad mental predomina y oculta la mayor parte de las enfermedades físicas.

Es muy dificil cuidar tales pacientes después de operarles; a veces se quedan quietos sin morfina, pero siempre es preciso guardarlos bien, porque a menudo infectan las heridas, sacan los tubos de secar, o dañan a sí mismo en otra manera.

Generalmente es mejor correr un poco mas riesgo en la primera operación que hacerla poco a poco. También se ha tratado quirúrgicamente el ptisis en pacientes insanos, empleando la frenectomía.

Debe tratarse la hernia en los insanos para evitar la posibilidad de estrangulación, de la cual generalmente no se da cuenta hasta que sea precisco cortar la intestina.

Aproximadamente dos por ciento de los que sufren de paresis general, psicosis alco-

hólica, epilepsia, o dementia praecox pueden fiar en mejoramiento mediante tratamiento quirúrgico. El porcentaje más alto de mejoramientos de tal clase se ve operaciones pélvicas de mujeres insanas. Ultimamente se ha mostrado que puede esperar un mejoramiento en la condición de la mente en 16 a 18 de tales casos.

Casos donde no se debe efectuar tratamiento quirúrgico son: (1) historia de locura en la familia, (2) delusiones, (3) halucinaciones.

Cirurgia del cerebro debe efectuarse en los siguientes casos: (1) tumores del cerebro, (2) abceso del cerebro, (3) trauma del cerebro seguido por epilepsia de Jackson.

RIASSUNTO

Chirurgia nel malato di mente

La prima indicazione di malattia in uno psicopatico è di solito un'anormalità nel comportamento. Il disturbo mentale predomina e maschera la maggior parte dei disturbi fisici.

La sorveglianza postoperativa di questi pazienti è azzardosa; essi possono restare quieti senza morfina, ma devono essere sorvegliati, perchè spesso infettano la loro ferita, tirano fuori i drenaggi o si fanno del male in altro modo. Si è di solito giustificati nel prendere un rischio un po'maggiore nella prima operazione, piuttosto che tentare di farla a tappe. Anche tubercolosi è stata trattata chirurgicamente nell'insano, con frenectomia e collasso massivo. Si consiglia di curare l'ernia nel malato di mente per allontanare la possibilità di strangolamento, che di solito non viene scoperto finchè è necessaria una resezione dell'intestino.

Generalmente ogni paziente con paralisi generale, psicosi alcoolica, epilessia o demenza precoce ha meno del 2% di probabilità di migliorare il suo stato mentale per mezzo di interventi chirurgici. La più alta percentuale di miglioramento nello stato mentale dopo operazioni si trova nelle operazioni pelviche della donna insana. Figure recenti mostrano che c'è un miglioramento del 16-18% dopo operazioni in questi casi. Le controindicazioni per intervento nel gozzo o nelle psicosi sono: (1) storia di malattie mentali nella famiglia; (2) delusioni; (3) allucinazioni. Chirurgia cerebrale nel malato di mente può essere fatta per: (1) tumori cerebrali; (2) ascessi cerebrali; (3) trauma cerebrale seguito da epilessia jaksoniana.

New Method of Tube Pedicle Skin Grafting

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NEW YORK, NEW YORK

THOSE who, by severe accident or disease, have been maimed beyond recognition and thus damned to a life of misery, are most urgently in need of skillful plastic surgery. Such deformity means social and economic ostracism, with its inevitable deleterious effect on behavior and character.

In cases such as these beauty cannot be restored. The plastic surgeon can, however, restore normality to the features and make life livable for the unfortunate individual, who once again may find his place socially and economically. This cannot be done overnight. The greatest assistants to the surgeon are time, patience and painstaking labor.

A burnt child whose chin is fastened to its chest by a hideous scar, the victim of an explosion whose mouth is no longer human and whose eyelids are turned out of their sockets, the wretched being whose ear has been torn away by a whirling machine, the sufferer whose lip has been destroyed by cancer, a baby born with a cleft in the roof of its mouth—all these victims of ghastly disfigurements can be aided by plastic surgery, for all of these distortions can be relieved by the merciful art of transplanting tissue.

The desire to be normal in appearance is as old as history and from the beginning of time those afflicted with a facial disfigurement sought surgical relief to attain peace of mind. Therefore, contrary to popular belief, plastic surgery is not a modern invention. It is true that the restoration of features ravaged by the World War gave a great impetus to this branch of surgery and for the first time brought its more popular aspects to the attention of laymen. But plastic surgery had already been practised for centuries before the war. Though its early practitioners may have been singularly inept, it is as old as facial abnormality itself.

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EARLY HISTORY

The *Aryuveda*, a sacred journal of the ancient Hindus, reveals the fact that marked efficiency in plastic surgery through the use of skin grafts was attained in India more than 2,500 years ago. In those days it served a curious cause. A distorted conception of justice provided that the noses of girls of too amorous a disposition or of unfaithful wives might be mutilated by their irate fathers or husbands. Naturally enough, the victims of this brutal law sought the aid of surgeons, who, it is also recorded, were occasionally summoned by the remorseful fathers and husbands in an effort to atone for their momentary harshness. Thus at first the art of plastic surgery flourished in India mainly to correct nasal disfigurements inflicted in the name of chastity, to help victims of a barbaric law to live again the lives of normal human beings.

Mutilating the nose was also sometimes practised on prisoners of war. One Indian potentate, a king of Ghoorka, having captured a hostile city, commanded that the noses of all the inhabitants, except those of infants and of adults who played wind instruments, be cut off in order to remind them constantly of his power. The con-

quered province henceforth was known as the City of Cut Noses.

Because it was apparently effective and easily performed, the mutilation of the nose became eventually a stock punishment for various criminal offenses. It was simpler and cheaper to disfigure a criminal than to keep him in jail. Naturally, this barbaric practice made much work for the corrective surgeons.

These men, forerunners of the plastic surgeons of today, operated in hovels. All around them was filth; godliness came before cleanliness. Their methods, of course, were crude, often brutal.

About 500 B.C., however, after constant experimentation with plants, the technic, later known as the Hindu method of restoring the nose, was developed. This method consists of peeling from the forehead a strip of skin, one end of which is not severed. The strip is twisted so as to keep the outer layer—the epidermis—uppermost. It is then placed over the injured area and shaped to form a nose.

This Hindu method was described by two careful observers in a letter to the *Gentlemen's Journal*, London, of October, 1794. The operation which they witnessed was substantially the same as that evolved so many centuries earlier. Their description is as follows:

> Cowasjee, a Maharaja of the caste of husbandmen, was a bullock driver with the English army in the war of 1792, and was made a prisoner by Tippoo, who cut off his nose and one of his hands. In this state he joined the Bombay army near Scringapatam and is now a pensioner of the Honorable East India Company. For about twelve months he remained without a nose, when he had a new one put on by a man of the brickmaker caste, near Poonah.
>
> This operation is not uncommon in India, and has been practiced from time immemorial. Two of the medical gentlemen, Mr. Thomas Cruso and Mr. James Trindlay, of the Bombay Presidency, have seen it performed as follows:
>
> A thin plate of wax is fitted to the stump of the nose, so as to make a nose of good appearance. It is then flattened and laid on the forehead. A line is drawn around the wax and the operator then dissects off as much skin as it covered, leaving undivided a small slip between the eyes. This slip preserves the circulation till a union has taken place between the old and new parts.
>
> The scar of the stump of the nose is next pared off. The skin is now brought down from the forehead and being twisted half around, its edge is inserted into the raw stump so that a new nose is formed. A little terra japonica is softened with water, and being spread on slips of cloth, five or six of these are placed over each other to secure the joining. No other dressing but this cement is used for four days.
>
> It is then removed, and cloths dipped in ghee (a kind of butter) are applied. The connecting slips of skin are divided about the twenty-fifth day, when a little more dissection is necessary to improve the appearance of the new nose. For five or six days after the operation, the patient is made to lie on his back; and on the tenth day, bits of soft cloth are put into the nostrils to keep them open sufficiently.
>
> This operation is generally successful. The artificial nose is secure, and looks nearly as well as the natural one—nor is the scar on the forehead very observable after a length of time.

THE RENAISSANCE AND TAGLIACOZZI

It was not until the early Renaissance quickened the imagination of the civilized world that plastic surgery again emerged into the light. Two Sicilian professors of the art, Branca and his son, have left records of a number of cases of correcting extensive loss of the substance of the nose by using flaps of skin taken from the arm. Though their workmanship was comparatively crude, the results of their operations appear to have been excellent.

It was the Renaissance which produced the true father of modern plastic surgery—the Italian, Tagliacozzi, who developed methods which are still used in correcting facial defects. A profound student of anatomy and human nature, Tagliacozzi held the chair of surgery at the University of Bologna. Though recognition came to him during his lifetime, his work was constantly impeded by the prevailing bigotry of the time. But to this Renaissance surgeon goes the indisputable honor of having contributed more to the study of restorative surgery than any of his contemporaries. Frequent use of skin from the arm for transplanting to the face is the procedure for which he is chiefly remembered and this technic is, in his honor, known as the Italian method, in contradistinction to the

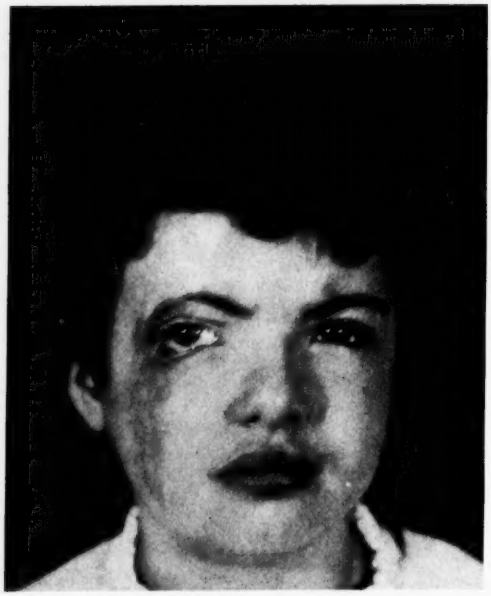

Fig. 1. Right cheek, temple and lower eyelid burned in fire. Contracture of scar produced hideous deformity with ectropion of right lower lid downward and outward.

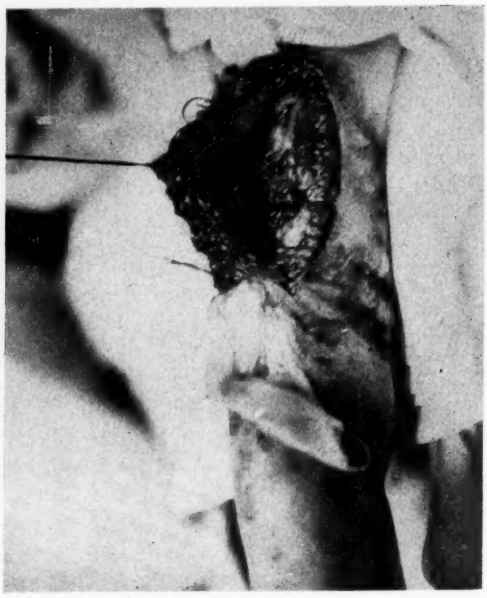

Fig. 2. Preparation of tubed pedicle from right arm. Two parallel incisions were made, creating a pedicle 2½ inches wide and 6 inches long which was transformed into a tube, raw surface outward, by means of interrupted silk sutures. Vaselinized gauze used to fill hollow of tube.

Hindu method of using a flap of skin from the forehead.

His methods were imitated by his students and eventually gained ascendancy in the profession. There were, however, even in his own day, physicians who supported the clergy in opposing Tagliacozzi. Such men branded him as an impostor and tried to discredit him. After his death his enemies succeeded in blackening his memory and his methods lapsed temporarily. Instead of transplanted tissues, surgeons resorted again to primitive methods for remaking noses, using oilcloth, papier-mâché, wood or silver.

Much that we know of Tagliacozzi's work can be learned from his treatise on *The Surgical Treatment of Mutilations by Grafts,* published in 1597, wherein he attributes his discovery of skin grafting to his knowledge of tree grafting. He discusses his method of repairing mutilated lips, noses and ears, the place from which the skin graft is to be selected, the quantity needed and the method of joining it to the mutilated parts. Though little was known in his day of the psychology of facial appearance and of the effects of deformity on behavior, he explains in the introduction to the treatise that a beautiful face attracts, but an unsightly one fills us with revulsion. He writes: "We restore, repair and make whole those parts of the face which Nature has given but which Fortune has taken away, not so much that they may delight the eye but that they may buoy up the Spirits and help the mind of the afflicted. . . . We do this . . . as becomes good physicians and disciples of that great Hippocrates."

Fig. 3. Two weeks later, after scar of face was removed and everted lid returned to normal anatomic position, proximal end of tube was detached from arm, tube was unrolled and brought to point of repair of face. Interrupted silk sutures again used. Plaster of Paris cast applied to chest and arm to prevent motion of skin flap.

Fig. 4. After two weeks, cast was removed, distal end of flap detached from arm and repair of remaining defect in face completed with distal end of unrolled tube. This illustration shows the results eight months later.

European surgeons were informed of the practice of this ancient art in India through the letter to the *Gentlemen's Journal* already quoted. One of the first to adapt this information to the need of his clientele was J. C. Carpue, of London, who successfully performed a number of similar operations in 1814. About the same time C. F. von Grafe, in Germany, successfully employed both the Italian and Hindu methods. Subsequently surgeons in France and America used the same methods. Ever since, surgeons have been perfecting and adding to the technic of the art of plastic reconstruction.

Thus we see that plastic surgery is probably as old as facial disfigurement itself.

MODERN DEVELOPMENTS

It is true, however, that never before was the art of plastic reconstruction practised on so wide a scale as it was during and after the World War, partly because facial and bodily mutilation exceeded all previous records and partly because surgery had never before been able to cope so adequately with disfigurements.

Those injured in parts of the body other than the face offered the less serious problems, for their scars could be covered by clothing. But many others, with their features shockingly mangled, suffered the tortures of the damned. Fearing to confront the world again with distorted faces, they prayed for death. These men needed speedy relief, if they were to escape irreparable psychic trauma. The surgeons working at the base hospitals on various head specialties united their skill in perfecting old meth-

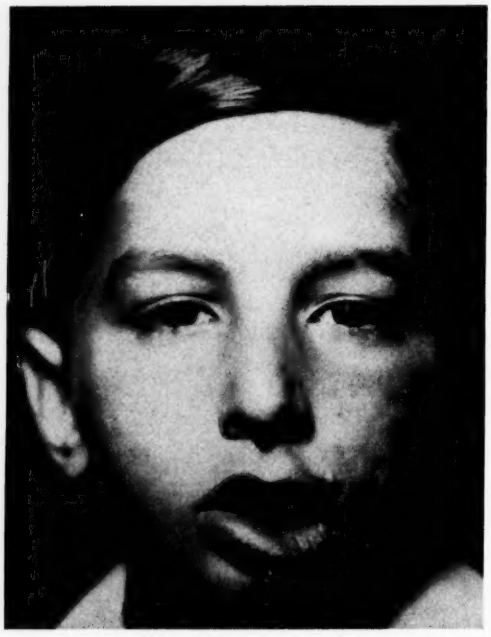

Fig. 5. Face burned in fire. Contracted scar producing downward and outward eversion of lower lip and angle of mouth, plus distortion of chin.

Fig. 6. Tube brought to point of repair after preparation similar to that in previous case. Cast applied to prevent motion of flap. Right arm used because left arm was also burned.

ods and devising new ones to rebuild these ravaged faces.

When the soldiers returned from Europe, their features reconstructed, they were able once more to find places for themselves socially and economically. Such adaptation would not have been possible had their faces still borne the ghastly traces of their experiences in the war.

But times of peace also have their burden of accidents at home, in industry and on the highway, and their corresponding need for corrective surgery by the utilization of a skin flap.

Forehead flaps can be modified to suit each individual case. A flap can be taken from the neck or chest, from behind the ear or from a more distant part, such as the arm (according to the Italian method), or even from the abdomen. But since the skin from these areas has to travel a considerable distance to reach its destination it is best for safety's sake to do these procedures in two stages. An attached transplant from one of these sources is thus given the name of delayed flap.

A new procedure in the use of delayed flaps was perfected by Harold D. Gillies, of London, during the World War. To insure the health and success of the flap, he transformed its pedicle into a tube by uniting its edges. It thus nourished itself in its own blood, so to speak.

Though a distinct advance in the art of transplanting skin, the tubed pedicle has the disadvantage of curving on itself while in tubed form, and although this tube is un-

Fig. 7. Final result nine months later.

rolled when utilized to cover a defect, the tendency for the skin flap to arch a bit remains. Naturally this is more evident in narrower grafts. Here it is a definite disadvantage when a defect of the face has to be repaired because it is difficult to make the arched skin grow flat against the face. In addition, since it is necessary to cut into the fat of the tube in order to flatten it out for use, a certain amount of injury to the tissue takes place in the smaller tubes.

NEW TECHNIC

To prevent this tendency for the flap to curl the author has perfected a new technic in skin transplanting. The pedicle is transformed into a tube with its raw surface outward instead of inward, the reverse of the Gillies technic. With its raw surface outward the tube cannot grow together and therefore no curling of the skin flap takes place. Besides, the raw surface of the graft can be permitted to granulate as much as is desired if a thicker graft is needed, thus obviating additional surgery in the subsequent use of cartilage fascia or fat.

It would appear that a tube with its raw surface outward is exposed to infection, but this is not true since proper care of the graft, like the proper care of any other tissue in a surgical procedure, will avoid infection.

The author has used this new method with success since 1933, presenting preliminary reports in 1934 and 1936.

SUMMARY

A new method of tube pedicle skin grafting is presented. The purpose is to prevent the tendency of the skin flap to curl, by transforming the pedicle into a tube with its raw surface outward instead of inward, the reverse of the Gillies technic. With the raw surface outward the tube cannot grow together and no curling of the skin flap takes place.

RÉSUMÉ

Une nouvelle méthode de greffage de la peau par tubage pédicule

L'auteur nous donne un historique de la greffe cutanée. Sa méthode personelle pour empêcher le lambeau cutané de se recroqueviller est de transformer en tube le pédicule avec sa surface crûentée à l'extérieur.

ZUSAMMENFASSUNG

Neue Methode für Röhrenförmige Gestielte Hauttransplantation

Eine Geschichte der Hauttransplantation ist kurz ausgeführt. Der Autor beschreibt eine neue Methode, in welcher der Hautlappen der in der Transplantation verwendet wird, nicht aufrollen kann, weil er in eine Röhre mit der Subkutan-Oberfläche nach aussen, statt nach innen geformt wird.

RESUMEN

Nuevo metodo de injerto de la piel con un peticulo tubulado

La historia del injerto de la piel es presentada. El método del autor de prevenir el enroscamiento del colgajo usado en el injerto, transformando este en un pediculo tubular con las superficies asperas hacia fuera en vez de adentro, es descrito.

RIASSUNTO

Nuovo metodo di innesto cutaneo a peduncolo tubolare

Si presenta un cenno storico dell'innesto cutaneo. Si descrive il metodo dell'autore per ovviare l'arricciamento del lembo usato per l'innesto, nel quale si trasforma il peduncolo in un tubo con la superficie del taglio all'esterno anzicchè all'interno.

INTERNATIONAL ASSEMBLY IN MEXICO

Those contemplating traveling to Mexico for the next International Assembly to be held in Mexico City, August 10 to 14, 1941, inclusive, may obtain information about transportation facilities, special Assembly train arrangements and excursion tours by addressing Dr. Max Thorek, International Secretary of the International College of Surgeons, 850 West Irving Park Blvd., Chicago, Illinois.

A General Survey of the Present Status of Our Knowledge of Cataract

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LOSS of sight is one of the most dreadful catastrophies that can befall an individual, and impaired sight takes a tremendous yearly toll in the economic life of our nation. Senile cataract is, at present, the most common cause of blindness in the United States.[1] Physicians and surgeons who see the blind and near blind in their daily practices are naturally interested in information bearing upon cataractous changes.

Studies on the physical and chemical properties of the crystalline lens have revealed some interesting facts. The normal human crystalline lens increases in weight throughout life. At birth it weighs approximately 0.10 gram, increasing to approximately 0.26 gram in the ninth decade[2]. In general a cataractous lens is lighter in weight than a normal lens of the same age. There is a gradual loss of weight in senile cataract from the stage of incipiency and throughout its development to the stage of hypermaturity.

The normal lens also shows a gradual increase in volume with age. The volume of the cataractous lens may be greater or less than that of the normal lens.

WATER CONTENT

Many interesting experiments have been made on the water content of normal and cataractous lenses[3]. The water content of the crystalline lens is less than that of any other tissue, but the curve of water content of the lens from the embryonic to the adult stage parallels in general that of the entire body. The soluble and insoluble proteins of the crystalline lens increase continuously in absolute amounts but follow different laws of growth. While the metabolically active crystalline increases in direct proportion to the increase in lens surface, the metabolically inactive albuminoid accumulates in proportion to the square of the lens weight.

The water content of the crystalline lens is determined by a dynamic equilibrium among the osmotic, imbibitional, and tension forces. If a normal lens is placed in 1.25 per cent saline solution, no change in volume occurs. The osmotic pressure of the lens is therefore equal to a 1.25 per cent saline solution. However, if the same lens is ground into a pulp, the osmotic pressure becomes equivalent to a 0.9 per cent saline solution. The difference between these two figures is regarded as the imbibitional force.

In general the imbibitional quality of protein is influenced by the *p*H, by electrolytes, by aging, by lipoid content and by proteolysis. The *p*H of the lens is 7.5. At a *p*H of 5.16, which is the isoelectric point of the amphoteric lens proteins, the imbibitional forces reach a minimum. Hence a tendency toward acidity tends to cause dehydration of the lens. The aging of proteins, or syneresis, is likewise accompanied by a loss of imbibitional powers or a tendency toward dehydration.

In the cataractous lens there is a marked deficiency in imbibitional power. In the breaking down of protein or hydrolysis there is a progressive loss of water-binding capacity as the molecule becomes smaller. Fat is known to be hydrophobic, whereas cholesterin-esters are markedly hydrophilic. When the ratio of cholesterol content to fatty acid content is reduced, as it is in the cataractous lens, there naturally occurs at the same time a reduction in imbibitional power.

In the development of senile cataract dehydration occurs as the cataract matures. In the stage of hypermaturity there is again a marked hydration. The only reliable data regarding the water content of cataractous lenses must be obtained from intact lenses removed intracapsularly. Actual investigation has shown that the average water content of a mature senile cataract was 76 per cent when removed intact in its capsule and 65 per cent when expressed after incision of the capsule.

Studies of autolysis of the crystalline lens reveal that the breakdown of the lens substance is a slow process, usually requiring at least six months to reach its maximum. Suspensions of lens material in unboiled aqueous showed much greater proteolysis than similar suspensions in boiled aqueous or saline. This is regarded as proof of the presence of a proteolytic ferment[4] in the aqueous. Three ferments active in proteolysis of the lens are: (1) aqueous ferments; (2) autolytic ferments within the lens; and (3) hematogenous ferments derived from blood serum. The latter appear even though there may be no accompanying vascular or inflammatory reactions.

INORGANIC AND ORGANIC CONTENT

Among the inorganic constituents of the normal lens are calcium, sodium, potassium, sulfates, phosphates, chlorides and magnesium. Ions of these minerals comprise the electrolytes which are present in the lens as well as in the aqueous and vitreous. In cataract formation by autolysis the cellular destruction of the lens is accompanied by a loss of nitrogen; and when nitrogen is lost, potassium disappears concurrently. In order to maintain its osmotic equilibrium the cataractous lens must acquire bases to replace the depleted potassium supply. Both sodium and calcium increase in the cataractous lens to compensate osmotically for the potassium deficiency. These mineral changes are so definite and quantitative that the nitrogen loss varies inversely with the calcium gain, and either determination may be used to gauge the extent of development of the cataract.

The organic constituents of the lens are perhaps of more interest. The protein of the normal lens may be separated into approximately equal parts of soluble and insoluble fractions. The soluble fraction consists of one part alpha crystallin, two parts beta crystallin and a small amount of albumin. The insoluble fraction consists of albuminoid. The nitrogen of the normal lens is present chiefly in the form of protein and there is a gradual increase in nitrogen content with advancing age. Carbon, hydrogen, oxygen and sulfur are also present in the protein.

In senile cataract there is an increase in the amount of insoluble protein and a decrease in the amount of soluble protein by a transformation of the latter into the former.

Among the interesting studies on lens protein are those relating to certain immunologic and serologic reactions[5]. Through experiments in immunizing cattle to lens protein and to other tissue proteins of different species of animals, it has long been known that lens protein is organ specific and not species specific. Serums of such immunized cattle react in the precipitin test with the antigens or lens protein from any species of animal, but do not react with the blood serum or body protein of the animal species from which the immunizing lens

protein is obtained. Stated in another way, lens protein is immunologically the same in all animals and differs from general body protein. Therefore, all animals have in their own crystalline lenses a tissue which, based on possible immunologic reactions, is a potential foreign protein. The term "potential foreign protein" is used advisedly, because as long as the lens remains normal and its capsule intact no immunologic or protein reaction occurs. And yet there remains in every animal, by the breakdown of the lens structure and by dialysis or by the rupture of the lens capsule, the possibility of becoming sensitized to the protein of its own lens.

Furthermore, investigations have revealed that each component protein of the lens has not only its own chemical composition and isoelectric point but also its own immunological reaction and specificity.

CONGENITAL CATARACT

Investigations into the prenatal effect of lens antibodies have demonstrated that congenital cataracts can be produced in the laboratory. An anti-lens serum is prepared by injection of lens protein into an animal until the presence of precipitins to lens protein can be demonstrated in this animal's serum. This anti-lens serum is then injected into pregnant rabbits. Some of the mothers and the offspring of such injected rabbits appear with opaque autolyzed lenses. Controls of rabbits injected with serum of similar animals not immunized with lens protein do not show any lens changes.

In another experiment a group of guinea pigs whose antecedents had had normal eyes for four generations were injected intraperitoneally with lens protein and a month later some of these were given some of the same protein intravenously. All of these died of anaphylactic shock. The other animals were needled and in every case the local reaction in the eyes was much more severe than in needled controls. Three days after the needling operations these animals were bred. Two months later one-half of the offspring were born with typical congenital cataracts. Such induced eye defects can be transmitted to descendants for at least six generations without further injection of lens protein or sensitized serum.

A preponderence of evidence exists to show that cataractous patients may have a definite hypersensitivity if the lens capsule is ruptured during the operation for cataract removal. In some cases it is even possible to demonstrate this hypersensitivity by cutaneous reaction to lens protein.

In the lens, as in other tissues, all physiologic functions occur with very little change in hydrogen-ion concentration. Only a slight shift to either the alkaline or acid side indicates a pathologic condition.

In breaking down the lens proteins into their component amino acids only a few of the known twenty-five amino acids have not yet been isolated. Authoritative opinion on the development of cataracts in rats on a controlled vitamin A deficiency diet indicates that the cataracts so produced were really due to the lack of certain essential amino acids. There exists no proof that carotene, carrot juice or vitamin A will either prevent or cure cataracts.

METABOLISM

Metabolism as applied to the crystalline lens refers to the chemical processes which various foodstuffs undergo between absorption and excretion. It involves the taking up of certain substances from the aqueous by diffusion through the lens capsule and the loss of other substances by passage from the lens into the aqueous.

Certain oxidizing enzymes (oxydoses and dehydrogenoses), about which very little is known, are found in all animal lenses[4].

The normal lens also contains an internal respiration or autoxidation system which is independent of any living tissue or cells. The substance responsible for this internal respiration is a complex tripeptid composed

of cysteine, glutamic acid and glycocoll. It is dialyzable and easily extractable but does not occur in the aqueous of eyes with normal lenses. Oxygen from the aqueous diffuses into the lens, where it forms a complex labile combination with free glutathione. One of the features of this change or combination is the oxidation of cysteine to cystine. At the same time certain carbohydrate-splitting enzymes (one capable of splitting glucose into lactic acid has been definitely demonstrated) probably set up certain glycolytic processes the oxygen for which is supplied by the reduction of oxidized glutathione. The whole process is extremely complicated and from our present knowledge we get only a glimpse of an occasional step or side reaction, from which we have as yet been unable to postulate anything even approaching a general conception of the whole formula[6].

Our knowledge of the metabolism[7] of the cataractous lens is likewise very incomplete. The glutathione content of cataractous lenses is markedly reduced in comparison with the content of normal lenses. It has also been observed that there is a sharp decrease in the amount of glutathione after the crystalline lens has been exposed to infra-red rays, and an even more marked decrease after exposure to ultraviolet rays.

Among the lipids, cholesterin and lecithin are constituents of the normal lens and increase in amount with advancing age. In cataractous lenses the lipid content is higher than in normal lenses. The part played by these substances in the metabolism and involution of the lens is unknown. However, cholesterol is known to accumulate wherever tissue disintegration occurs.

The sugar content of the normal lens in two-year-old cattle varies between 126 and 143 milligrams per cent. In both diabetic and nondiabetic patients with cataracts the fasting aqueous sugar is approximately 20 per cent below the fasting blood sugar; but both aqueous and blood sugar determinations are higher in diabetics than in nondiabetics.

Observations on the changes which occur in the crystalline lens during the formation of cataracts have given us a rather clear conception of the cellular pathology involved, but have added little to our actual knowledge of why these changes occur. Yet it is important to keep the nature of these changes in mind, and it is interesting to attempt to correlate such information with known facts regarding the structure, function, metabolism and chemistry of the lens[8].

SCLEROSIS

The process of physiologic or nuclear sclerosis begins in the embryonic lens, continues throughout normal life and, unless the changes are extreme, causes very little impairment in the transparency of the lens. Many accept the view that nuclear sclerosis represents nothing more than one of the early involutionary changes of senescence; and that every individual, if he lives long enough, will develop some degree of nuclear sclerosis or phacosclerosis. The sclerosing itself is attributed to a gradual decrease in the permeability of the lens capsule with advancing age.

Sclerosis of the lens may vary in both intensity and extent not only in different individuals but even in the lenses of one individual, so that there may develop multiple irregular refracting surfaces within the lens, the more sclerosed lens fibers having a higher index of refraction than the less sclerosed fibers. The tendency of the lens to absorb shorter wave lengths of light in the ultraviolet range of the spectrum also becomes exaggerated in the sclerosed lens, so that there is often complete absorption by the sclerosed lens of the wave lengths in the violet and blue range of the visible spectrum. Hence white light passed through a sclerosed lens emerges somewhat yellow in color. As the sclerosis proceeds, the color of

the lens gradually changes from yellow, passing through succeeding deeper shades of brown, and in extreme cases to black[9]. In such brown and black cataracts there occurs a ferment capable of oxidizing colorless diozyphenylalanin to brown melanin[10].

Gifford[11] points out the important fact that often this type of cataract never becomes "mature" in the sense of complete opacification, but may be removed, and should be, whenever the opacity is sufficient to interfere with the patient's customary activities. Waiting for maturity would unnecessarily condemn many patients to practical blindness for the remainder of their lives.

The incipient stage of senile cortical cataract, as viewed with the slit lamp[12], is characterized by the appearance of small bubbles or vacuoles under the lens capsule, by lamellar separation, by suture splitting, and by a diffuse haziness in the cortices. In the intermediary stage are found large irregular fluid spaces, deposits of coagulated lens protein, and Morgagnian globules or spheric grayish masses. In this stage the lens imbibes fluid and becomes swollen or intumescent. In the mature stage the autolysis of the lens fibers becomes complete. Many of the soluble products of degeneration enter into solution and then pass out through the lens capsule by dialysis. The lens becomes smaller and compact and approaches its normal size. In the hypermature stage there is further dissolution, hydration, and a tendency toward deposition of extraneous material.

NUTRITIONAL CONSIDERATIONS

The effects on the lens of toxic substances or faulty nutrition appear first in the posterior cortex because the posterior capsule, being in contact with the vitreous, is the most poorly nourished area of the lens. The posterior cortical cataracts begin with the appearance of vacuoles and irregular opaque deposits in the posterior cortex.

Complicated cataracts of the anterior and posterior subcapsular type, seen in patients with tetany, diabetes, iridocyclitis, dermatitis, detachment of the retina and other conditions, either local or systemic, begin with subcapsular vacuoles which rapidly increase in number and size and are accompanied by a cloudy swelling and disintegration of the cortical fibers.

Tetany, associated with disturbances in calcium metabolism in infants and in persons whose parathyroids have been removed in whole or in part during thyroidectomy, is frequently accompanied by cataract formation. In these cases the concentration of blood calcium is always reduced below normal. If adequate measures are taken to prevent tetany in infants, and in post-thyroidectomy patients, cataracts seldom develop.

The high incidence of cataracts among diabetics is due not only to the changes in the osmotic pressure in the aqueous by the increased sugar concentration, which tends to drive out the electrolytes, but also to other factors such as increased vascular sclerosis and faulty fat metabolism with excess acid formation.

The majority of investigations regarding the relationship between vitamin deficiency and cataract formation are experimental in character and much more work needs to be done before definite conclusions can be drawn. Studies indicate that the vitamin C content of the blood plasma of patients having cataract is less than that of persons without cataract. From very meager laboratory investigations it is also presumed that the diminution of vitamin C in the aqueous and lens precedes the appearance of the lens opacities. On the other hand, the crystalline lenses of guinea pigs who were able to survive only two months on a vitamin C free diet showed no indication of cataract formation. Other investigations seem to indicate that vitamin C has some as yet unknown influence on the autoxidation system in the lens.

In albino rats and mice and in Norway rats cataracts can invariably be produced by placing the animals on a diet deficient in vitamin B_2 (also known as vitamin G or riboflavin). The cataracts appear in an average of 52 days; the animals are able to survive on such a diet for an average of 74 days. Administration of vitamin B_2 after the appearance of the first lens opacities restores the animal to health and in approximately two-thirds of the control cases arrests the progress of the lens opacification. In the other one-third the cataracts proceed to maturity even after the restoration of a more than adequate supply of vitamin B_2 to the diet. Vitamin B_2 is now generally regarded as the cataract-preventative vitamin, but its value as a therapeutic agent in the treatment of cataract is very limited. Only in some of those cases where the cataract formation is due to a vitamin B_2 deficiency is the administration of vitamin B_2 capable of arresting the opacification of the lens. It is not capable of restoring transparency to any crystalline lens that has already developed opacities.

Young rats put on a diet consisting of 50 per cent galactose begin to develop lens opacities in three to seven days and the cataracts become complete in twenty-two to twenty-eight days. These galactose cataracts are due to an increased permeability of the lens capsule, which occurs as soon as galactose appears in the aqueous, and results in the diffusion of glutathione out of the lens into the surrounding aqueous. Analysis of the lenses of guinea pigs and rabbits on galactose diets reveals a progressive diminution in the glutathione content. Previous studies mentioned above have shown that the glutathione content is diminished in the senile lens and is decreased or absent in all forms of cataract. A word of caution should be added here regarding the recent use of galactose in clinical tests for certain endocrine disorders.

SURGERY

In regard to cataract surgery it should hardly be necessary to point out that the simple but somewhat crude procedures of years ago have been improved, so that today the results are most satisfactory and the chances for a cataract patient to recover his sight are excellent[13]. Peter[14] maintains that in no department of surgery has progress been greater. In order better to understand the difference between the old and the new methods I quote his brief description: "The lens is surrounded by a capsule or covering. In the older methods of surgery, after opening the eye and enlarging the pupil by an iridectomy, the capsule is incised, or a part of the capsule is removed by sharp forceps, after which the cataract is expressed from its capsule and through the corneal wound. If the cataract is not mature, soft lens particles are often left in the eye. The retained particles, inflammatory exudate, and remaining lens capsule may not leave a clear pupillary space. A needling or discission operation then becomes necessary, in order that a clear opening may be made through this secondary cataract formation, so that the patient can see. Those who do a two-stage operation, first, do an iridectomy; second, express the cataract; and as a third stage, if necessary, do a needling operation.

"In the newer methods, the lens capsule is not broken, but the capsule and cataract are lifted out of the eye as one body. This leaves a clear black pupil, and a needling is unnecessary. To enhance the value of this type of operation, the pupil is not enlarged, but left round as it was before operation. Two methods of extraction are now practiced. Either the lens is lifted out by smooth capsule forceps, or the lens is grasped by a small vacuum cup and is lifted from the eye in its capsule by suction. In either form, the operation is known as 'cataract extraction in capsule.' The older method is

known as 'expression operation,' or sometimes is called 'extraction with capsulotomy,' meaning thereby that the capsule is ruptured, the lens is expressed through the opening in the capsule, but part of the capsule is left in the eye."

SUMMARY

If we attempt to state as pertinently as possible the precise cause of cataracts, we might say that they are caused by some interference with the internal respiratory system in the crystalline lens. Undoubtedly, this respiratory system may be influenced or affected adversely by a multiplicity of substances and conditions, but always with the inevitable loss of transparency of the tissue which contains it.

There is no known specific nonsurgical cure for cataract, but it may be possible in certain cases to retard or arrest the development of cataracts.

As to the prevention of cataract, we are aware of the necessity of an adequate supply of vitamins B_2 and C. The prevention of injuries; the avoidance, elimination or irradication of local, focal or systemic infection; and the prevention of hereditary transmission of the defects produced by such infection are other important factors in prevention of cataract. The ingestion of such specific tissue toxins as dinitrophenol and galactose should be discouraged. The prevention of tetany in infants and of calcium deficiency in post-thyroidectomy cases are special aspects of cataract prevention.

From what we know regarding the transmission of ocular defects in young animals who have been inoculated with lens protein, and in children and young adults who have been subjected to extracapsular cataract or needling operations, it seems advisable at least to warn afflicted individuals before they become prospective parents of the possibility of defective eyes in their offspring.

Information gained from immunologic studies of lens protein is a potent argument in favor of total or intracapsular removal whenever the matter of surgical treatment of cataract comes up for consideration. Even with the meager knowledge we have regarding the effects of subjecting an individual to the protein of his own lens, it seems that the wisest course is to avoid any such possible deleterious effects by removing the cataractous lens intact in its capsule, and without subjecting the patient to the danger of any possible protein reaction.

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RÉSUMÉ

Une revue generale du present état de nos conaissances sur la cateracte

Si nous cherchons de definir le plus convenablement que possible la cause precise de la cateracte, nous pouvons dire qu'elle est causée par quelque abnormalité du système respiratoire interne du cristallin. Sans doute, ce système respiratoire peut être influencé par plusieures substances ou conditions, mais toujours avec la perte inevitable de transparence du tissu qui le contient. Nous ne connaissons aucune cure specifique pas chirurgicale pour la cateracte, mais il peut être possible, dans quelque cas, de rétardez ou arrêter son développement. Quant

à la prévention, nous savons de la necessité d'une souffisante provision de vitamines B_2 et C. La prévention des dommages, l'éviter, éliminer ou extirper infection locale, focale ou systémique et la prévention de la transmission héréditaire des défauts produits par cette infection sont des autres importants facteurs dans la prévention de la cateracte. L'ingestion de specifiques toxines des tissus comme dinitrophenol ou galactose devraient être découragée. La prévention de la tétanie dans les enfants et du défaut de Ca dans cas de post-thyroidectomie sont des aspects particuliers de la prévention de la cateracte.

De ce que nous savons à l'égard de la transmission des défauts oculaires dans des jeunes animaux inoculés avec des proteines du cristallin et comme il se rencontre dans les enfants ou jeunes adultes soumis à de operations de cateracte extracapsulaire ou de discission, il semble convenable au moins de prévenir ces individus, avant qu'ils ne deviennent pas possibles parents d'enfants qui peuvent avoir défauts oculaires.

Informations obtenues d'études immunologiques des proteines du cristallin de même contiennent un autre puissant argument en faveur du déplacement totale ou intracapsulaire, lorsque la question du traitement chirurgical vient prise en consideration. Aussi avec la maigre conaissance que nous avons à l'égard des effects de soumettre un individu à les proteines de son même cristallin, il semble que le procédé le plus sage soit d'éviter tout possible effet nuisible comme ceux-là, en enlévant le cristallin avec la cateracte intact avec sa capsule et sans soumettre le malade au danger de possible réactions par les proteines.

ZUSAMMENFASSUNG

Eine Übersicht über die gegenwärtig bekannten Tatsachen des Katarakt

Wenn wir den Versuch machen wollten, die genaue Ursache des Katarakts so treffend als möglich auszudrücken, so könnten wir sagen, dass es sich um eine Störung des Gasstoffwechsels der Linse handle. Zweifellos wird dieses Atmungssystem durch eine Reihe von Substanzen und Umständen in verschiedener Richtung hin beeinflusst und angegriffen, doch immer mit dem unvermeidlichen Schwund der Durchsichtigkeit des enthaltenen Gewebe. Es gibt keine spezifische nicht chirurgische Heilungsmethode für Katarakt, doch kann es in manchen Fällen möglich sein, die Entwicklung eines Kataraktes zu verzögern oder aufzuhalten.

Was die Vermeidung des Kataraktes betrifft, so ist uns die Notwendigkeit einer ausreichenden Zufuhr von Vitamin B_2 und C bewusst. Andere wichtige Punkte zur Vermeidung eines Kataraktes sind die Verhütung von Verletzungen; die Vermeidung, Entfernung oder Ausmerzung von lokalen, fokalen oder systemischen Infektionen; und die Vermeidung der Vererbung eines solchen Defektes, hervorgerufen durch ebensolche Infektionen. Von Einverleibung solcher spezifischer Gewebstoxine, wie Dinitrophenol und Galaktose soll abgeraten werden. Ein besonderer Gesichtspunkt in Vermeidung von Katarakt ist die Verhütung von Tetanie bei Kindern und von Calciummangel bei Postoperativen Fällen von Thyroidectomie.

Soviel wir bezüglich der Vererbung von Augendefekten bei jungen Tieren wissen, welche mit Linsenprotein inokuliert wurden und Kindern und Halbwüchsigen welche extrakapsulären Katarakt oder eine Staroperation hatten, scheint es ratsam, solche Individuen bevor sie Kinder zur Welt setzen, wenigstens vor der Möglichkeit eines Augendefektes in ihren Nachkommen zu warnen.

Studien der Immunität gegenüber Linsenprotein rechtfertigen ein zusätzliches wichtiges Argument zugunsten totaler intrakapsulärer Entfernung, wenn chirurgische Behandlung des Kataraktes in Frage kommt. Selbst mit dem geringen Wissen,

welches wir bezüglich der Aussetzung eines Individuums zu seinem eigenen Linsenprotein, haben, scheint es das Beste zu sein, die vom Katarakt befallenen Linse intakt in ihrer Kapsel zu entfernen, um eine mögliche schädigende Wirkung zu vermeidenn und den Patienten nicht der Gefahr einer Eiweissreaktion auszusetzen.

RESUMEN

Resumen general del estado actual de nuestro conocimiento de cataratas

Si ensayamos decir tan claramente que nos sea posible la causa exacta de catarata, tenemos que explicar que están causadas por alguna irregularidad en el sistema respiratorio de la lente cristalina. Sin duda, este sistema puede ser influído o afectado adversamente por una multiplicidad de sustancias o condiciones, pero siempre con la pérdida inevitable de la transparencia del tejido que lo contiene. No conocemos ningún método de curarlo que no sea quirúrgico, pero es posible, en ciertos casos, retardar o arrestar el desarrollo de la catarata.

En cuanto a la prevención, reconocemos la necesidad de tomar bastante de las vitaminas B_2 y C. La prevención de heridas, evitar, eliminar, o irradicar infecciones locales, focales, o sistémicas; y la prevención de transmisión hereditaria de los defectos producidos por tales infecciones, son otros factores de gran importancia en la prevención de la catarata.

De lo que sabemos ahora de defectos oculares, en animales jovenes que han sido inoculados con proteína de la lente, y tambien de lo que ocurre en niños y jovenes que han sufrido catarata extracapsular u operación de aguja, parece preciso avisar bien a tales individuos antes de que vengan a ser padres prospectivos de la posibilidad de ojos defectivos en sus niños.

Estudios imunológicos de la proteína de la lente también ofrece un argumento muy fuerte a favor de sacar totalmente o intracapsularmente cuando haya cuestión de tratamiento quirúrgico de la catarata. Aunque no tenemos datos completos sobre el asunto de tratar a un paciente con proteína de su propia lente, parece que el curso mas avisable sería evitar la posibilidad de efecto deleterio mediante sacar la lente cataratosa intacta en su cápsula, sin poner al paciente en ningún peligro de reacción de la proteína.

RIASSUNTO

Una rivista generale del presente stato delle nostre conoscenze sulla cateratta

Se tentiamo di definire quanto piu strettamente ĕ possibile la causa precisa della cateratta, possiamo dire che essa ĕ causata da qualche disturbo del sistema respiratorio interno del cristallino. Indubbiamente questo sistema respiratorio puŏ essere influenzato o colpito da molteplici sostanze o condizioni, ma sempre con la perdita inevitabile di trasparenza del tessuto che lo contiene. Non si conosce alcuna cura specifica non chirurgica per la cateratta, ma puŏ essere possibile, in qualche caso, di ritardare o arrestare il suo sviluppo. In quanto alla prevenzione, sappiamo della necessită di un adeguato apporto di vitamine B_2 e C. La prevenzione di danni, l'evitare, l'eliminare o estirpare l'infezione locale, focale o sistemica e la prevenzione di trasmissione ereditaria dei difetti prodotti da tale infezione, sono altrettanto importanti fattori nella prevenzione della cateratta. L'ingestione di specifiche tossine dei tessuti come dinitrofenolo e galattosio dovrebbero essere sconsigliate. La prevenzione della tetania infantile e della deficenza di calcio in casi di posttireodectomia sono aspetti speciali della prevenzione della cateratta. Da quello che sappiamo riguardo la trasmissione di difetti oculari in giovani animali inoculati con proteine del cristallino e come anche accade in bambini o giovani adulti sottoposti a opera-

zioni di cateratta extra capsulare o a discissione, sembra consigliabile almeno di metter in guardia questi individui prima che essi diventino futuri genitori di figli che possono avere difetti oculari.

Informazioni ottenute da studi immunologici delle proteine del cristallino egualmente indicano un altro potente argomento in favore della rimozione totale o intracapsulare, qualora la questione del trattamento chirurgico venga presa in considerazione. Anche con la magra conoscenza che abbiamo al riguardo degli effetti di sottoporre un individuo alle proteine della sua stessa lente, sembra che il procedimento piu saggio sia di evitare ogni possibile effetto deleterio come questi, asportando il cristallino con la cateratta intatto con la sua capsula e senza sottoporre il paziente al pericolo di ogni possibile reazione da proteine.

As we go to press the sad news reaches us that

PROFESSOR DR. THEODORE PAPAYOANNOU

Vice-President of the International College of Surgeons

Died suddenly in Cairo, Egypt

The Officers and Members of the International College of Surgeons extend their condolences to the bereaved family.

Endocrine Considerations of a Few Gynecological Conditions

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IN the study of endocrinology as related to gynecology there are many phases to be considered. Endocrinology may be divided roughly into three eras[1]:

1. The period dating from ancient times to the middle of the nineteenth century is generally spoken of as the speculative era.

2. The latter half of the nineteenth century is considered the experimental era. During this period there was a great amount of research on both men and animals.

3. The era from the beginning of the twentieth century to the present time is thought of as the biochemical era.

Endocrinology has opened up a wide field in the study of menstrual disorders. We may say that during the past ten years the hormones have found a place in the armamentarium of the gynecologists. With uterine bleeding in which there is a hormone deficiency or an overstimulation, good results have been obtained from a number of commercial products[2]. With the administration of estrogenic hormones we expect good results in the nervous menopause, vasomotor flushings, irritability, etc., (conditions either artificial or natural) and in some cases of the involutional melancholias, if the proper dosage is administered[3].

The hormones are most effective in functional bleeding of the adolescent and have enabled this type of case to be treated otherwise than by radical doses of X-ray or radium, which frequently cause permanent disability[4]. A definite diagnosis should be made before radiation is used, and attempts made to restore the normal function by endocrine therapy, when feasible.

Part of the function of the pituitary is to complete the work of the follicular hormone, and further to develop the endometrium from the proliferative phase into the secretory phase, the latter beginning with the rupture of the follicle and ending with the menstrual flow. The corpus luteum hormone is the hormone that prepares the endometrium for pregnancy.

Amenorrhea frequently denotes the most profound failure of ovarian function. Hormone studies of amenorrhea in women reveal a deficiency of the estrogenic substances, which results in a scanty and irregular menstruation, indicating a definite ovarian failure.

For the completion of the normal menstrual cycle, four hormones must be present, properly balanced, and must make their appearance in their proper sequence. The anterior pituitary gland furnishes two of these hormones. These are prolan A, the follicle-stimulating hormone, and prolan B, the luteinizing hormone[5]. The ovary produces the other two hormones, known as estrin and progestin. The anterior pituitary is the stimulator and energizer of the ovary, where estrin and progestin are produced and act on the endometrium and uterine muscle.

No hormone, when injected, can or does have any influence on the parent gland. Ovarian hormones have no influence on the ovary, and the anterior pituitary has no influence on the pituitary body, just as insulin

has no influence on the pancreas. Ovarian hormone therapy is only substitution. The pituitary hormones are stimulants to the ovaries, but are only substitutive to the pituitary body. The ovarian function is wholly dependent upon the hormones liberated by the pituitary cells.

The anterior pituitary cells produce five hormones:

1. The follicle-stimulating hormone.
2. The luteinizing hormone.
3. A growth hormone.
4. A metabolic hormone.
5. A thyroid-activating hormone.

BASAL METABOLISM

A basal metabolism test should be a part of all endocrine studies. The ovaries are not essential to the life of the individual woman. Likewise the removal of other endocrine glands, such as the adrenals or hypophysis, is compatible with life, but with the removal of these glands normal functions are greatly impaired[6]. Metabolic disturbances follow the total ablation of the thyroid, parathyroid, adrenal, hypophysis, ovaries, etc. The value of desiccated thyroid in the menopausal syndrome has been greatly overestimated; it seems to be of use only when the basal metabolic rate is below normal.

The tradition that the menopausal symptoms in women must be borne is unsound, for the administration of estrogenic preparations is rational and relieves symptoms in a great majority of cases. A distinction must be drawn between the treatment of women with menopausal symptoms and women passing through the menopause[7]. The menopausal woman may present many other manifestations which are only indirectly of menopausal significance and which often constitute real problems in the treatment.

Before beginning endocrine therapy on victims of melancholia, an attempt should be made to evaluate the symptoms. If there are other causes of an endocrine nature precipitating the symptoms, these causes should be removed before attempting endocrine therapy. The failure to obtain relief from the majority of the subjective symtoms in uncomplicated menopausal cases is usually due to inadequate dosage.

It is important to know whether the ovaries are secreting estrogenic hormone in normal amounts and whether the anterior lobe of the pituitary is secreting prolan—the gonadotropic hormone—in normal or in excessive amounts. This is determined by an assay of the blood, urine, etc.

The patient's endometrium is decidedly the best object by which to determine the presence of the ovarian and corpus luteum hormones. Corpus luteum hormone cannot be detected in the blood or urine of the average nonpregnant patient. For this reason, the endometrial biopsy taken just before menstruation has been the only way to determine whether a corpus luteum has been produced, this showing that ovulation has taken place.

During the menopause the disturbance created in the quantitative relationship of the hormones often produces painful breasts and occasionally nodular masses, which, on account of the age of the patient, cause a fear of malignancy. In these cases proper dosage of estrogenic hormone will frequently relieve the pain and nodules, but, as always, malignancy should be uppermost in the mind until proved not present. There are various points of similarity between the changes in the breast and those in the uterus during the menstrual cycle.

UTERINE BLEEDING

The treatment for abnormal uterine bleeding differs according to the patient's age. Before the fortieth year endocrine therapy, thyroid extract in cases of low basal metabolism, or either the luteinizing or the corpus luteum hormone may be tried. But after forty, if uterine bleeding recurs following a curettage, the best

plan is probably to resort at once to surgery or some form of radiation therapy to suppress the ovarian function completely.

An attempt to correlate the type of bleeding with the type of endometrium reveals that a relationship does exist. The severe bleedings usually occur from endometrial characteristics of glandular cystic hyperplasia and indicate a second degree ovarian failure. Bleeding as well as amenorrhea is found in cases presenting an atrophic endometrium, which indicates a third degree ovarian failure.

Immediately after pregnancy begins there is an increased production of both pituitary and ovarian hormones, which are excreted through the urine. The pituitary hormone continues to increase to about the fourth or fifth month of pregnancy. After this there is a regression of these hormones, and near the end of pregnancy they are found to be only slightly above normal.

Young women who have ovarian failure are usually of normal weight and have nearly normal metabolic rates. They may complain of many symptoms associated with their irregular and scanty menstruation[8]. Whatever the degree of ovarian failure may be, a careful examination of the patient will reveal evidences of some endocrine disturbance. The most common are in the pituitary, thyroid and ovary. Associated with the endocrine lesions, one may find such other conditions as anemia, focal infections, nutritional disturbances and nervous conditions. Excellent results are obtained in the treatment of amenorrhea of the adolescent by using gonadotropic hormones. In treating menopausal symptoms the ovarian or estrogenic hormone is used.

A study of the endometrium by obtaining endometrial biopsy, using either the uterine curet or other methods, reveals definite phases of the endometrium. These are as follows: (1) the early proliferative, (2) the late proliferative, which comes in the first half of the cycle, (3) the early secretory and (4) the late secretory or premenstrual, appearing during the latter half of the menstrual cycle. These phases are found in the normal endometria. So, roughly speaking, we think of two phases, the proliferative and the secretory.

In the study of sterility the endometrium gives us a great deal of information, for certainly a number of women who menstruate regularly have anovulatory menstrual periods. By obtaining the endometrial biopsy two days before the expected time for the menstrual flow, we are able to determine if the tissue is in the secretory stage, which it should be if ovulation has taken place. Of course, without ovulation we could not expect a pregnancy.

COMMERCIAL PREPARATIONS

In regard to the treatment of patients who are suffering with the many disturbances which go with endocrine imbalance, but especially amenorrhea, menorrhagia, metrorrhagia, hypomenorrhea and hypermenorrhea, a great deal of consideration should be given to the various products now in use. We should search for other symptoms, and correct them where possible, before beginning endocrine therapy, then choose the product suitable to the individual case. As previously stated, we cannot expect a stimulation of the parent gland by one of its own products; so frequently we have to look to the pituitary to stimulate the ovary, and to the ovary to "put on the brakes" or slow down the activity of the pituitary.

One of the most important reasons for the acceptance of the new products is the brilliance of the basic scientific work which has preceded their appearance in the clinical field. Whatever may be said against the new endocrine therapy, it can never be said that it is entirely empirical.

Clinically, there is no significant difference in the results if the same number of units of the same products of the different

companies are administered by the same route.

Since the different pharmaceutical houses put out similar preparations under their own trade names, the practitioner is somewhat at a loss as to which preparation to use. So, to simplify this dilemma, I think it well to mention the preparations which are practically one and the same by their trade names, not giving the manufacturer's name but only the name of his product.

A. Anterior Pituitary-Like Hormone. Prolan (obtainable during pregnancy from urine or placenta), marketed under these trade names:

1. A.P.L.
2. Entromone.
3. Antuitrin-S.
4. Pregnyl.
5. Follutein.
6. Korotrin (formerly called Antophysin).

B. Anterior Pituitary Gland Extraction Products. These are extracts of the glands themselves, marketed under these trade names:

1. Gonadotropic Factor, Polyansyn, Ovarian-Anterior Pituitary Liquid.
2. Gonadotropic Factor, Polyansyn, Growth Complex.
3. High Potent Prephysin, Prephysin (Anterior-Pituitary Gonadotropic Hormone).
4. Pituitary-Extract, Anterior Lobe.
5. Antuitrin-G.
6. Ambinon.
7. Gynatrin.
8. Pituitary-Body, Anterior Lobe, Desiccated.
9. Anterior Pituitary Extract.
10. Phyone.

C. Estrogenic Hormones. Ovarian substances. (One ten-thousandth mg. of estrone, the estrogenic hormone, represents one I. U. Stated differently, .1 mg. of estrone represents 1,000 I. U.):

1. Estrone, Estriol.
2. Emmenin.
3. Entromone.
4. Estrone, Estriol.
5. Theelin, Theelol.

If and when the time comes that substances of similar composition, intended for the same use, are put out under a common name, it will be very much easier to remember their therapeutic values.

Before attempting endocrine therapy, a correct diagnosis should be made, if at all possible; otherwise the patient is put to an expensive ordeal without any clinical improvement, and the preparation is condemned when it would have been all right if proper diagnosis had been made. With new discoveries in endocrinology being made month after month, we should not be the "first to pick up the new nor the last to lay aside the old."

SUMMARY

Estrogenic hormones are almost specific in the nervous stages of the menopause, in vasomotor flushings, irritability and involutional melancholia, if the proper dosage is used. Hormones are most effective in the functional bleeding of adolescents and save these unfortunate young women from radical doses of radium.

Amenorrhea is the most profound of ovarian failures. The study of amenorrhea reveals a deficiency of the estrogenic substance. Scanty and irregular menstruation indicates ovarian failure.

No hormone can, or does, have any influence on the parent gland. In other words, if the parent gland is to be stimulated, it is necessary that this stimulation come from another source which goes to make up the cycle. For example, the pituitary stimulates the ovary, and the ovary acts on the pituitary. Ovarian hormone therapy is a substitution and pituitary hormones are stimu-

lants to the ovaries, but a substitution to the pituitary body. Ovarian function is wholly dependent upon the hormones liberated by the pituitary cells.

Basal metabolism should be determined as a part of all endocrine studies. This should be done before any treatment is begun.

The tradition that menopausal symptoms in women must be borne is unsound, for the administration of estrogenic preparations is rational and relieves the symptoms in a great majority of cases. A distinction must be drawn between the treatment of women with menopausal symptoms and women passing through the menopause. Failure to obtain relief from the majority of the subjective symptoms in uncomplicated menopause is usually due to inadequate dosage. In menopausal women improper relationship of the hormones often produces painful breasts and at times nodular masses, which, on account of the age of the patient, often raise fear of malignancy. Suitable dosage of estrogenic hormones will frequently relieve the pain and nodules.

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RÉSUMÉ

Considerations endocriniennes dans certaines conditions gynecologiques

L'étude de l'endocrinologie embrasse trois périodes: 1) Des temps anciens à la moitié du 19ème siècle (ère speculative); 2) Jusqu'à la seconde moitié du 19ème siècle (ère experimentale-recherches dans les hommes et dans les animaux); 3) L'ère qui va du commencement du 20ème siècle à nos jours (ère biochimique). Les hormones estrogeniques sont presque specifiques dans les états nerveux de la menopause, dans les rougeurs vasomoteurs, irritabilité et melancholie involutionelles, si la propre dose est employée. Les hormones sont surtout efficaces dans les saignements fonctionels des adolescentes et ils ont éloigné de ces malheureuses jeunes filles l'usage de radicales doses de radium. L'aménorrée est le plus profond des défauts de l'ovaire. L'étude de l'aménorrée révèle un défaut de substance éstrogenique. Insuffisantes et irregulaires menstruations indiquent un défaut de l'ovaire. Pas d'hormone peut avoir ou a aucune influence sur la glande génitale. En d'autres mots, la glande génitale pour être stimulée a besoin d'un stimulus d'une autre source qui sert à former le cycle. Par exemple la glande pituitaire stimule l'ovaire et l'ovaire agit sur la glande pituitaire. Thérapie avec hormones ovariens remplace l'ovaire et les hormones pituitaires le stimulent, tandis qu'ils replacent au contraire la glande pituitaire. La fonction ovarienne est entierement dépendante des hormones libérés par les cellules de la glande pituitaire.

Le metabolisme basale devrait être une partie de tous les études d'endocrinologie. Ce-ci devrait être calculé avant de commencer tout traitement. La tradition que les femmes naissent avec les symptomes de la menopause n'est pas vraie, parce que la somministration de preparés estrogeniques est rationale et guerit les symptômes dans une grande majorité des cas. Une distinction doit être faite entre le traitement des symptômes de la menopause et la femme qui passe la période de la menopause. Insuccès dans l'obtenir soulagement dans la majorité des symptômes objectifs dans la menopause pas compliquée est generalement du à dose insuffisante. Dans les femmes en menopause la rélation pas propre des hormones souvent produit douleur à la poitrine et quelque

fois masses nodulaires, et pour l'age des malades il y a souvent la peur de malignité. Doses propres d'hormone estrogeniques souvent amélioreront la douleur et les nodules.

ZUSAMMENFASSUNG

Endokriner Einfluss auf manche Gynekologischen Zustände

Das Studium der Endokrinologie umfasst drei Perioden:

1. Vom Altertum bis zur Mitte des neunzehnten Jahrhundert (spekulative Ära).

2. Die zweite hälfte des Neunzehnten Jahrhundert (experimentelle Ära–Forschungsarbeit an Mensch und Tier).

3. Die Zeit von Beginn des zwanzigstens Jahrhundert bis zum heutigen Tage (Biochemische Ära).

Estrogene Hormone sind für die nervösen Zustände der Menopause fast spezifisch, für vasomotorisches Erröten, Reizbarkeit und gesteigerte Melancholie, wenn sie in der richtigen Menge verabreicht werden. Hormone sind ausserordentlich wirksam in funktionellen Blutungen bei Heranwachsenden und haben die Anwendung radikaler Radiumdosen bei diesen unglücklichen jungen Frauen beseitigt. Amenorrhoe ist die stärkste ovarielle Mangelerscheinung. Das Studium der Amenorrhoe ergab den Mangel estrogener Substanzen. Mangelhafte und unregelmässige Menstruation weist auf ovarielle Störungen hin. Es gibt kein Hormon das auf die Keimdrüse einen Einfluss hat oder haben kann. Um die Keimdrüse anzuregen, ist es mit anderen Worten nötig, dass dieser Einfluss von einer anderen Quelle kommt welche diesen Zyklus beeinflusst. Zum Beispiel regt die Hypophyse die Ovarien an und die Ovarien wirken auf die Hypophyse ein. Ovarialhormontherapie ist eine Substitution und Hormon der Hypophyse ist Stimulans für die Ovarien, jedoch eine Substitution für die Hypophyse. Die ovarielle Funktion ist völlig abhängig von den Hormonen welche von den Zellen der Hypophyse gebildet werden.

Der Grundumsatz soll immer ein Teil des endokrinen Studiums sein. Er soll vor Beginn der Behandlung bestimmt werden.

Der Glaube dass Symptome der Menopause auftreten müssen ist unrichtig, da eine Verabreichung von estrogenen Präparaten angezeigt ist und in der Mehrheit der Fälle die Erscheinungen Beseitigt. Es muss zwischen der Behandlung der Erscheinungen der Menopause und der Frau zur Zeit der Menopause unterschieden werden. Ein negativer Erfolg in der Beseitigung der subjektiven Symptome bei unkomplizierten Fällen von Menopause ist meistens aüf die unzureichende Dosierung zurückzuführen. Die Frauen weisen, durch die gestörte Wechselbeziehung der Hormone zur Zeit der Menopause, oft Schmerzen in den Brüsten und manchmal knotenförmige Massen auf, worauf wegen des Alters des Patienten oft Malignität befürchtet wird. Richtige osierung von estrogenen Hormon wird oft Schmerzen und Knoten beseitigen.

RESUMEN

Consideraciones endocrinas de algunas condiciones ginecologicas

El estudio de endocrinología puede ser presentado en tres partes:

(1) Desde el principio hasta mediados del siglo XIX, período que se llama el especulativo.

(2) La segunda mitad del siglo XIX, o sea la epoca de experimentación en hombres y en animales.

(3) El período desde principios del siglo corriente hasta hoy, o sea laera bioquímica.

Los hormones estrogénicos se consideran casi específicos en casos de rubores vasomotores, en los períodos nerviosos de la menopausa, y en melancolia involucional, si

se da la cantidad correcta. Los hormones son muy efectivos en la menstruación funcional de la adolescente, y ha evitado la necesidad de que esas desgraciadas tomen dosis radicales de radium. Amenorrea es la irregularidad ovárica mas profonda, y un estudio de amenorrea nos muestra una deficiencia de la sustancia estrogénica. Menstruación espasa e irregular indica una irregularidad ovárica.

Ningún hormon puede influír la glándula "pariente." Es decir, para que sea estimulada la glándula, es preciso que la estimulación venga de otro punto de origen que completa el ciclo. Por ejemplo, la glándula pituitaria estimula el ovario, y este influye el pituitario. Terapía de hormon ovárico es una sustitución, y hormones pituitarios estimulan el ovario pero son sustituciones para el cuerpo pituitario. La función ovárica depiende por completo en los hormones liberados por las células pituitarias.

El metabolismo básica debe formar una parte de todo estudio endocrino, y esto debe hacerse antes de que se inicie cualquier tratamiento.

La tradición que dice que las síntomas de la menopausa deben sufrirse por toda mujer no tiene ninguna basis, porque tratamiento mediante preparacioens estrogénicas es racional y ameliora las condiciones en la mayor parte de los casos. Se debe distinguir entre el tratamiento de las síntomas de la menopausa y las mujeres que están pasando por el período de la menopausa. Cuando no se puede obtener amelioración en las síntomas subjectivas en casos que no muestran complicaciones, es posible que el dosis no ha sido adecuado. En tales mujeres, a menudo las relaciones irregulares entre los hormones producen dolores en los senos y a veces masas; a causa de la edad de la paciente se tieme que haya malignidad. Dosis adecuado de hormones estrogénicos muchas veces ameliora el dolor y las masas.

RIASSUNTO

Considerazioni endocrine su alcune condizioni ginecologiche

Lo studio dell'endocrinologia abbraccia tre periodi: 1) Dai tempi antichi alla metă del 19° secolo (era speculativa); 2) Durante la seconda metă del 19° secolo (era sperimentale-ricerche in uomini ed animali); 3) L'era che va dal principio del 20° secolo ai giorni nostri (era biochimica).

Gli ormoni estrogeni sono quasi specifici negli stati nervosi della menopausa, negli arrossamenti vasomotori, irritabilită e melanconia involuzionali, se la dose appropriata ĕ usata. Gli ormoni sono soprattutto efficaci nelle emorzagie funzionali delle adolescenti ed hanno allontanato da queste sfortunate giovani l'uso di radicali dosi di radio. L'amenorrea ĕ il piu profondo dei difetti ovarici. Lo studio dell'amenorrea rivela un difetto della sostanza estrogena. Scarse e irregolari mestruazioni indicano difetto ovarico.

Nessun ormone puo avere o ha alcuna influenza sulla ghiandola genitale. In altre parole, la ghiandola genitale per essere stimolata necessita di uno stimolo da un'altra sorgente che serva a formare il ciclo; per es. l'ipofisi stimola l'ovaio e l'ovaio agisce sull'ipofisi. Terapia con ormone ovarico sostituisce le ovaie e gli ormoni pituitari la stimolano, mentre invece sostituiscono l'ipofisi. La funzione ovarica ĕ interamente dipendente dagli ormoni liberati dalle cellule dell'ipofisi.

Il metabolismo basale dovrebbe fare parte di tutti gli studi di endocrinologia. Questo dovrebbe essere calcolato prima di iniziare ogni trattamento.

La tradizione che le donne nascono con i sintomi della menopausa non è vera, perchè la somministrazione di preparati estrogeni è razionale e guarisce i sintomi in una grande maggioranza di casi. Una distinzione deve essere fatta tra il trattamento

dei sintomi della menopausa e la donna che passa il periodo della menopausa. Insuccesso nell'ottenere sollievo nella maggioranza dei sintomi subbiettivi nella menopausa non complicata è generalmente dovuto a dosaggio inadeguato. Nelle donne in menopausa l'improprio rapporto degli ormoni spesso produce dolore al petto e qualche volta masse nodulari, e per l'età della paziente c'è spesso paura di malignità. Dose adeguate di ormoni estrogeni miglioreranno spesso il dolore ed i noduli.

INTERNATIONAL ASSEMBLY

Associate Members, Members and Fellows desiring to present papers at the International Assembly of the International College of Surgeons to be held in Mexico City, Mexico, August tenth to fourteenth, 1941, will please communicate at once with Dr. Desiderio Román, 250 South 17th Street, Philadelphia, Pennsylvania, Chairman of the Program Committee for the United States.

Appendical Changes in the Prodromal Stage of Measles

WITH REPORT OF CASE

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AND
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UNIQUE changes in the pharyngeal mucosa and in the lymphoid tissue of the tonsils during the prodromal stage of measles were called to the attention of the medical profession in 1931 by Warthin,[1] who was unaware that cells similar to those described by him had been observed in the tonsils of children who died of measles by Alagna[2] in 1908 and reported in 1911. The changes described by Warthin and considered by him to be of diagnostic and prognostic significance in predicting the later eruption of measles were based on the production of multinuclear giant cells in the lymph follicles together with lymphoid exhaustion of the germinal centers. In addition he described changes in the overlying mucous membrane consisting of infiltration by syncytial giant cells, lymphocytes and monocytes accompanied by local edema and congestion and these he considered to be suggestive of potential Koplik spots.

The findings of Warthin in his four cases were confirmed by Finkleday,[3] who described similar syncytial giant cells in the tonsils removed from a child who developed the eruptive stage of measles three days after operation. In his review of the literature pertaining to the histopathology of measles, Warthin[1] referred to a summary published by Ewing[4] in 1909 concerning the pathological changes in the skin and mucous membranes in measles. This report contains the statement, "There is a uniformity in the number of large round cells in the derma, and these seem to be divided among large mononuclear leukocytes and multiplying endothelia." Neither Ewing nor Mallory and Medlar[5] described syncytial giant cells or multinuclear plasma cells in the tissues they studied, nor was Warthin able to find any participation of the vascular endothelium either in the production of the giant cells or in the other tissue change which he described.

GIANT CELLS IN APPENDIX

The presence of giant cells in the lymphoid tissue of an appendix removed during the prodromal stage of measles was first reported by Herzberg.[6] Davidsohn and Mora[7] later described giant cells occurring in the appendices of two patients who had been operated upon for appendicitis during the prodromal stage of measles, and in the appendix of a third patient who had developed appendicitis during the course of measles. These observers were unable to find cells of this type in the appendix of a fourth patient operated upon 10 days after the appearance of Koplik spots. The histologic descriptions of Herzberg and of Davidsohn and Mora tally in all particulars except that Herzberg was unable to find

giant cells in the appendical mucosa, these cells being restricted to the lymph follicles. Giant cells were present in both the mucosa and the submucosa of the appendices of the first three cases reported by Davidsohn and Mora. Herzberg emphasized the scarcity of giant cells in some parts of the submucosa and Davidsohn and Mora suggested a relationship between the development of these cells and the eruptive stage of measles. In two of the latter's cases in which the appendices had been removed two days before the appearance of the rash the giant cells were very numerous. In their third case, in which the appendix had been removed two days after the development of the rash, the cells were much less numerous, while in their fourth case operation being performed ten days after Koplik spots appeared, no giant cells were found. In addition to these four instances, three isolated reports of similar cases with giant cells in the appendix before the appearance of the measles rash have been contributed to the literature by Finkleday,[8] Fischer[9] and Schultze.[10]

The participation of the vascular endothelium in the inflammatory reaction occurring in the appendical lymph follicles is not described by any of the above mentioned writers. As will be seen in the description of our case, endothelial hyperplasia was very marked and the participation of large recticular cells which appeared to be actively phagocytic was noteworthy. Our findings tend to confirm for the appendix Ewing's description of "multiplying endothelia" in the derma in measles.

CASE REPORT

The report of our case is as follows:

T. W., a white boy five years of age was first seen on March 13, 1931, at his home. For several hours he had been complaining of generalized abdominal pain. A few hours later the pain became localized in the lower right abdominal quadrant and was accompanied by hypersensitiveness to touch and spasm of the right rectus muscle. The patient was removed at once to the Sacred Heart Hospital, his temperature on admission being 104° F. and his pulse 140. He had no cough or sore throat and no Koplik spots could be seen. The leukocyte count, verified by a second count, was 3,000 per c. mm., with polymorphonuclear neutrophils 55 per cent, lymphocytes 42 per cent, monocytes 3 per cent. A diagnosis of acute appendicitis was made and operation was decided upon.

A McBurney incision was made. The appendix was swollen and both the appendix and the cecum were of a bluish hue. The appendix was removed and the patient was returned to bed. On the third day after operation the temperature rose to 100° F., Koplik spots appeared on the buccal mucous membrane and the rash of measles developed. The course was mild and recovery was uninterrupted.

The gross description of the appendix was as follows: "It measures 80x5 mm. Its surface has a bluish color and a slightly congested appearance. The peritoneum is of a leaden hue. The mucous membrane is definitely hyperplastic, containing large coalescent lymph follicles which project into the lumen; these are particularly prominent near the base of the appendix. The lumen contains one coffee-bean shaped mass of firm feces and some extravasated blood. There is a soft, enlarged lymph node in the meso appendix."

The microscopic description of the routine section emphasized the hyperplasia of the periphery of the lymph follicles and the pallor of their centers. The presence of numerous large reticular cells was noted but the giant cells were not described. Following the report of Herzberg's case the appendix was re-examined and new sections were cut. These contained syncytial giant cells in the mucosa and in the submucous lymph follicles. The case was reported in February, 1932, to the Washington, D. C., Society of Pathologists and sections were submitted to Dr. R. D. Lillie of the National Institute of Health, Washington, D. C. Dr. Lillie's description of the sections follows and his photomicrographs are used in this report. (See Figs. 1 and 2.)

"The submucosa and serosa present moderate fibrous thickening. The lymph follicles are pale, swollen and sharply defined. Mitoses in the last are few, but there are many large reticular cells with ingested pyknotic nuclear fragments both within and outside the germinal centers. The germinal centers also contain numbers of small giant cells with multiple, hyperchromatic nuclei and scanty cytoplasm. The mucosa shows slight interstitial fibrosis and moderate infiltration by plasma cells and scattered small giant cells with broad deeply basophilic cytoplasm and three to seven small, round pachychromatic nuclei. The last are probably multinuclear plasma cells. The mucous crypts show moderate secretory activity and occasionally contain a few nuclear fragments in the lumena. Ulceration and subepithelial vesicular exudation are absent. A few eosinophils are present in the mucosa. The endothelium of the small blood vessels in the lymphoid tissue is often swollen and thickened and in some in-

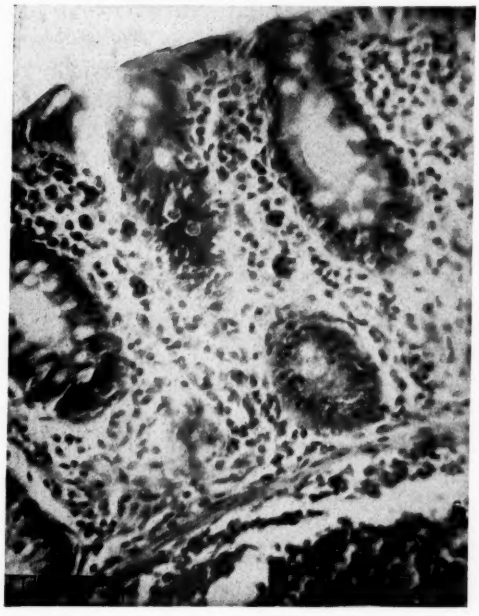

Fig. 1. Lymph follicle, showing hyperplasia of germinal center and many phagocytic reticular cells containing ingested nuclear debris.

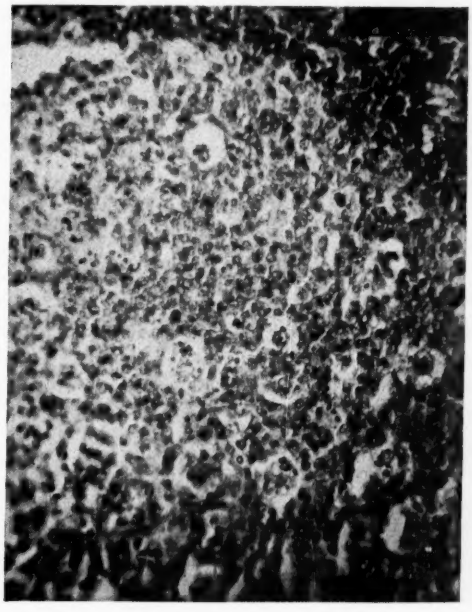

Fig. 2. Megakaryocytoid giant cells in mucosa of appendix.

stances these capillaries resemble giant cells except for their narrow central lumen. Others (giant cells), however, possess large, single and lobate nuclei of the megakaryocyte type and lack lumena."

ETIOLOGY

Frank appendicitis is a rare complication of measles, although pseudo-appendical symptoms are not infrequent. Statistics regarding the incidence of true appendicitis in measles are not available but the subject recently has been investigated by Thenebee, Hirshberg and Cenci[11] who stress its rarity and the paucity of references to it found in the literature. According to these writers, the first report of appendicitis developing during the course of measles was made by Williams[12] in 1901. Subsequently cases have been reported by Rost,[13] Gottstein and Küttner[14] and Fisher.[15] Of special interest is a case seen by Grossman[16] in which the appendicitis occurred during the stage of the rash and was accompanied by numerous circumscribed red spots on the intestinal mucosa. Thenebee *et al.* accounted for the development of appendicitis in measles by ascribing it to mechanical pressure on the blood vessels of the mucous membrane exerted by the hyperplastic lymphadenoid tissue of the submucosa, which favors the successful invasion of the appendix by secondarily infecting micro-organisms. They also called attention to a pharyngitis-appendicitis symbiosis or relationship such as has been described as occurring occasionally in scarlet fever and in cases of streptococcus sore throat. In none of the cases referred to by them is mention made of the occurrence of syncytial giant cells in the appendical mucous membrane.

The peculiar inflammatory reaction occurring in the lymph follicles of the tonsils in the prodromal stage of measles was interpreted by Warthin[1] as being of the nature of a defense reaction, while Finkleday[8] and

Fischer[9] believed that the similar reaction in the lymphoid tissue of the appendix was allergic in nature and was due to the previous sensitization of the tissues to the toxins of the unknown virus of measles. Schultze[10] believed the appendical changes to be due either to the direct action of the measles virus or to a reaction of hypersensitivity. Mayerhofer,[17] considering the prodromal angina of measles, stressed the part that the vascular endothelium plays in the inflammatory reaction in the lymphoid tissue and considered that this, as well as the pseudo-appendicitis of measles, is an expression of an allergic phenomenon involving the lymphatic system of the oral cavity and the appendix and that it is more or less similar to the anginas of serum sickness, vaccinia, leukemia and many septic infections and other infectious diseases.

PATHOGENESIS

Consideration of the fact that the cecum was involved in the congestive reaction in our case and that its peculiar discoloration resembled that of the appendix, and also of the fact that the hyperplasia of the appendical lymph follicles was most noticeable at the base of the appendix, leads to the suspicion that the cecum and perhaps other parts of the mucous membrane of the intestinal tract participate to some degree in the reaction which has just been described as taking place in the appendix. This is substantiated in one instance by the findings in Grossman's case, to which reference has previously been made. That this giant cell reaction is peculiar to measles and is not solely due to associated appendicitis seems to have been proved by Davidsohn and Mora,[7] who found that the giant cells were most numerous in relatively uninflamed portions of the appendices examined by them and that they are "rarely found in the portions of the appendix where profound diffuse inflammatory changes in the mucosa are present."

It is evident that a fundamental distinction exists between the lymphocytic and giant cell reactions which occur in the lymphadenoid tissue and mucous membrane of the pharynx, tonsils and appendix in the prodromal stage of measles and the frankly suppurative or anginoid reactions which are very occasional complications of measles in either its prodromal or eruptive stages. In the first instance the reaction, although varying in degree and in intensity in different cases, is probably universally applicable to all cases of measles, while the more severe inflammatory reactions are rare and are devoid of any qualities of histopathologic specificity. The latter probably are accidental complications which develop due to the fact that the involved organs, having deviated from their normal state of health, are thereby rendered more susceptible to the chance depredations of locally available pathogenic bacteria.

When the low leukocyte count of our patient is considered in relation to the marked reticulo-endothelial hyperplasia and evidence of active phagocytosis which has been shown to exist, there is seen to be great similarity between this picture and the tissue reaction which occurs at certain intervals after the administration for their nonspecific effect of bacterial vaccines, and also the reticulo-endothelial and bone marrow response that occurs in typhoid fever. If pathogenic bacteria previously have gained entrance or have access to the appendix, it is entirely possible that they might, during this period of local congestion and of depressed leukocytic response, cause inflammatory changes which an otherwise normal organ might be able to resist.

It seems to be apparent, from the nature of the tissue changes occurring in the appendix and in the mucosa of the pharynx as well as in the lymphoid tissue of the tonsils, that the initial pathologic changes caused by measles are widely distributed throughout the system some days before

the disease reaches the horizon of clinical visibility.

SUMMARY AND CONCLUSIONS

1. Another case is added to the literature of giant cells occurring in the mucosa and the lymph follicles of an appendix removed during the prodromal stage of measles.

2. Especial emphasis is given to the participation of the vascular endothelium and of the reticulum of the follicular centers of the appendix in the changes occurring in the prodromal stage of measles.

3. The occurrence of widespread tissue changes in measles several days before the clinical onset is stressed.

4. The possibility is considered that appendicitis and some of the other inflammatory complications of measles may be caused by secondary bacterial infection occurring during the period of alteration in the defense mechanisms of the body due to changes in the reticulo-endothelial system induced by measles.

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RÉSUMÉ

Les changements appendiculaires dans la phase prodromale de la rougeole

L'auteur rapporte un cas dans lequel des cellules géantes étaient présentes dans la muqueuse et dans les follicules lymphoides de l'appendice durant la phase prodromale de la rougeole. Il discute la participation de l'endothélium et du réticule des centres folliculaires de l'appendice dans la periode initiale de la rougeole. Il considère la possibilité que l'appendicite et d'autres, complications inflammatories survenant dans le cours de la rougeole dues à une infection bactérienne secondaire qui surviendrait pendant la période d'altération du mécanisme de défense, altération provoquée dans le système reticulo-endothélial par la rougeole.

ZUSAMMENFASSUNG

Veränderungen im Blinddarm im Prodromalstadium von Masern

Ein Fall wird berichtet bei dem Riesenzellen in der Schleimhaut und dem Lymphfollikel eines Blinddarms erschienen, der während des Prodromalstadiums der Masern entfernt wurde. Nachdruck wird gelegt auf die Beteiligung des Gefässepiteliums und des Retikuliums der Follikularzentren des Blinddarms während des Prodromalstadiums der Masern. Nachdruck wird gelegt auf das Vorkommen weit verbreiteter Gewebsveränderungen, die vor dem Klinischen befund auftreten. Der Verfasser rechnet mit der Möglichkeit dass Appendicitis und einige der anderen entzündlichen Komplikationen der Masern durch sekundäre bakterielle Infektionen die auf Grund der Veränderungen das Reticulo-endotelialen Systems im Alterationsstadium des Körpers während der Aktion des Verteitigungsmechanismus ercheinen.

RESUMEN

Cambios apendiculares en el estado prodromical del sarampion

Un caso es reportado en el cual células gigantes se presentaron en la mucosa y tejido folicular linfoideo de un apendix extraido durante el estado prodromal del sarampion. Enfasis es dado á la participación del endotelio vascular y de los reticulos del centro folicular del apendix durante el estado prodrómico del sarampion. La presentación de los amplios cambios de los tejidos varios dias antes de la presentacion de los primeros síntomas es considerado. La posibilidad de que la apendicitis y alguna otras complicaciones inflamatorias del sarampion peuder ser causada por inflaciones secundarias ocurridas durante el periodo de alteración de las defansas del organism debido á cambios en el sistema reticulo-endotelial inducido por el sarampion.

RIASSUNTO

Cambiamenti appendicolari nel periodo prodromo della rosolia

Un icaso è riportato nel quale celluli giganti si trovarono nel muccoso e linfatici follicoli di una appendice levata durante il periodo prodromo della rosolia. L'enfasi è data alla partecipazione dell'endotelio vascolare e della reticola dei centri follicolari dell'appendice durante il periodo prodromo della rosoila. Si è data anche molta enfasi sull'occorrenza di cambiamenti estesi del tessuto cellulare parecchi giorni prima dell'attacco clinico. La possibilità è considerata che l'appendicite e alcune delle altre complicazioni infiammatorie della rosolia possono essere causate da infezione batterie secondarie occorrendo durante il periodo di alterazione nel meccanismo di difesa del corpo dovuto a cambiamenti nel sistema reticolo-endotelio cagionati dalla rosolia.

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Blood Transfusion and Preserved Blood

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HISTORICAL RESUME[1]

FROM the earliest times of which we have any knowledge man's imagination has been intrigued by the possibility of using blood to restore or increase health, strength and vigor, as well as the more intangible qualities of courage and fearlessness. Until very recent times there has been more of superstition and romanticism associated with these ideas than rational application of any therapeutic principle.

Writings of the ancient Egyptians refer to the blood in such a way as to lead us to believe that they may have attempted transfusion in some crude manner and we know that their princes used blood baths as an aid to health and strength. The drinking of the blood of particularly brave gladiators dying in the arena at Rome was frequently practiced. In more modern times it was considered by many to be most beneficial to visit the abattoirs, there to drink the fresh-flowing blood of the slaughtered beeves.

The first written account of a transfusion is of that given to Pope Innocent VIII in 1492, when three young lads were sacrificed in the vain attempt to prolong the life of the dying pontiff.

In 1615 Libavius described a technic for blood transfusion which, with very slight modification, would fit that employed by Crile only thirty-odd years ago. He said, "Let there be a young man, robust, full of spiritous blood and also an old man, thin, emaciated, his strength exhausted, hardly able to retain his own soul. Let the performer of the operation have two silver tubes fitting into each other. Let him open the artery of the young man and put into it one of the tubes, fastening it in. Let him immediately open the artery of the old man and put the female tube into it and then, the two tubes being joined together, the hot and spiritous blood of the young man will pour into the old one, as it were from a fountain of life, and all his weakness will be dispelled."

Harvey's[2] epochal exposition of the circulation of the blood in 1628 was a great stimulus to the idea of blood transfusion. Francesco Folli[3], a Florentine physician, employed silver and bone cannulae in successfully performing transfusions in 1654; and Sir Christopher Wren[4] and Richard Lower[5], 1656 to 1665, did work in England that attracted the attention and finally the approval of the Royal Society. The following account of Lower's experiment on dogs occurs in *Pepys' Diary* under the date of November 14, 1666: "Dr. Croone told me at the meeting at Gresham College tonight which it seems they now have every Wednesday, again there was a pretty experiment of the blood of one dog let out, till he died, into the body of another on one side, while all his own run out on the other side. The first died upon the place, and the other very well and likely to do well. This did give occasion to many pretty wishes, as of the blood of a Quaker to be let into an Archbishop and such like; but, as Dr. Croone says, may if it takes, be of mighty use to man's health, for the amending of bad blood by borrowing from a better body."

It seems to me very much worth while to spend a little time occasionally in contemplation of the technical skill and in-

genuity shown and the wisdom often expressed by our predecessors of three hundred years ago. It is not only stimulating but conducive to proper humility and modesty when dwelling on our own achievements.

The report of Lower's work spread abroad, and in 1667 Jean Baptiste Denis[6], physician to Louis XIV, matched his noteworthy accomplishment by saving the life of a fever-stricken youth, nearly exsanguinated from venesection, by transfusing him with nine ounces of blood from a lamb.

This popularized the procedure to such an extent that many attempts at transfusion were made. However, with the entire lack of knowledge of the existence of iso-agglutinens in the blood, many were doomed to failure so that in the course of the next ten years transfusions fell into disfavor and were prohibited by law in France and in Rome and were disapproved by the Royal Society in London.

It was about one hundred and fifty years later that another Englishman, James Blundell[7], a London physiologist, in seeking some means of combating the then frequently fatal postpartum hemorrhages, devised a successful and simple method of drawing blood from a vein with a syringe into a funnel-shaped receptacle from which it was impelled into the vein of the patient.

This marked the first use of venous blood for transfusions, but Blundell and his followers were still greatly bothered by clotting, infections from lack of asepsis, and untoward and fatal results in some cases which we may presume to have been due to incompatibility of the bloods.

In 1835 Bischoff[8] first demonstrated defibrination of blood, and in 1847 Larsen[8] performed the first transfusion with defibrinated blood.

THE MODERN ERA

Little real progress was made, however, until after the epochal discovery by Landsteiner[9] in 1900, and independently by Shattuck[10], in England, of the presence of iso-agglutinens in the blood and their corresponding iso-agglutinogens in the red cells, which permitted the determination of the various blood groups. These first investigators identified only three blood groups, but in 1902 Decastello and Sturli[11] discovered the rare fourth group (AB). Jansky[12] and Moss[13], working independently in different countries, published elaborations of this work in 1907 and 1910, respectively. They both emphasized the importance of the agglutination tests for determining the presence of any incompatibility between bloods for the purpose of transfusion.

The modern era of blood transfusion had to deal principally with refinement of technic and the development of an acceptable anticoagulant.

Crile[14] developed a particularly skillful technic of artery to vein anastomosis, but this was beyond the capacity of the ordinary physician or surgeon. Also there were other disadvantages, such as uncertainty as to the amount of blood transfused, which prevented any wide adoption of this method.

In 1913 Edward Lindeman[15], then a resident pediatrician at Bellevue Hospital, devised a special cannula which bears his name and with which, plus an ordinary 20 cc. record syringe, he demonstrated that blood could be drawn from the vein of one person and injected into the vein of another without damage to the blood and well within the time limits of any early coagulation changes.

About the same time Kimpton and Brown[16], in Boston, devised the paraffin-coated tube which is still used locally to some extent, but which never became popular because of the care necessary in preparing the tubes.

Lindeman's method was quickly followed by many modifications, such as the

Unger, Scannell and other methods. Hustin[17], a Belgian, used sodium citrate in conjunction with glucose as an anticoagulant, but Agote[18] of Buenos Aires was the first to use it alone for this purpose, which he did in 1914. Lewisohn[19] and Weil[20] in this country, in 1915, demonstrated that sodium citrate could be safely employed as an anticoagulant. Because of the simplicity and ease with which transfusions could be accomplished by this means this procedure gained rapidly in popularity.

It is interesting to note how rapidly modification in the methods of handling blood followed Lindeman's success in 1913. We are still in the process of evolution, and while some of us question the wisdom of many of the measures recently introduced, it is possible that out of these experiments may come further knowledge and such improvement over present methods that the means will be justified by the end result.

At this point I might quote, as I have quoted many times before, the opinion expressed by Lederer[21]. He said, "The general principle that the more closely blood introduced into the recipient approximates the blood in its natural condition is a fundamental one. No matter how simple and how easy a method is, if that method permits of changes in the blood due to the admixture of foreign substances, to changes in reaction or temperature, to biological alterations in morphology (coagulation), and to ferment action, it is a departure from this principle." That is the principle to which I have adhered for twenty years and to which I shall continue to adhere until I am satisfied that we have succeeded in equaling or surpassing the quality of, and the benefits inherent in, fresh whole blood unchanged and unadulterated. However, I have no quarrel with those less conservative and perhaps more imaginative minds who are always seeking short cuts to the millenium.

There is no question but that the introduction of the citrate method made it possible to bring the aid of blood transfusion to many more of those who needed it than would have been possible by whole blood methods under conditions of warfare. It was during the World War that blood so treated was for the first time kept for a period of several days before using. This was done in a limited number of cases both in our own army and in certain Canadian medical units[22]. Such a procedure was not looked upon with any favor, however, and was excused only under the exigencies of war.

I have seen no detailed records as to the results obtained from this first use of preserved blood but, good or bad, this trial was prophetic of what was to come some twenty years later.

PRESERVATION OF BLOOD

This revived interest in preserved blood was brought about through the experimental and clinical work carried out in Russia on the utilization of cadaver blood for transfusion purposes.

Prof. W. N. Shamov[23] of Kharkov, U.S.S.R., conceived this idea in 1927 and, assisted by Dr. Kostiukov, carried out experiments on dogs in much the same manner as did Richard Lower in 1666, except that Shamov killed his donor dogs before using their blood.

In the course of the next two years Dr. Shamov's experiments established the fact that cadaver blood, following sudden death of a healthy animal, remained aseptic and viable for many hours after death and could be drained from the body in a fluid state up to as long as ten hours after death.

Conditions at Kharkov were such that Professor Shamov was unable to carry out the logical next step, which was the application of his idea to the human animal. Accordingly, he communicated the results of his work to Prof. S. S. Yudin[24], Surgeon-in-Chief at the Central Emergency Hospital,

and Director of the Surgical Clinic of the Post-Graduate Medical School in Moscow. Here it was possible to carry on the work with the human cadaver, and by February, 1935, Yudin was able to report on 924 transfusions of cadaver blood performed at his clinic besides one hundred flasks of blood sent to various other hospitals and clinics.

During this period one of Yudin's coworkers, Dr. M. G. Skundina, made an interesting observation which disclosed the fact that the blood of healthy individuals dying suddenly, as from trauma without hemorrhage, drowning, hanging, apoplexy, etc., while coagulating rapidly if removed from the body within a few hours after death, would, in from a half to one and a half hours, spontaneously return to the liquid state.

This action he called "fibrinolysis." It is believed to be due to some factor which causes the disappearance of the fibrogen without otherwise altering the blood. In fact, it was found that blood of this character could be kept longer before hemolysis appeared and that it gave post-transfusion reactions in only 5 per cent of the cases, as compared to 20 per cent following the use of blood to which sodium citrate had been added.

Among other advantages in the use of cadaver blood Yudin mentions the large amount (2-3½ liters) that can be obtained from a single body, and the very practical economy of the source of supply.

Yudin ended his report, which was read before the first Russian Congress for Blood Transfusion at Moscow, with the following conclusions:

"1. Transfusion of cadaver blood was demonstrated in animal experiment and proved its therapeutic value in considerable clinic material.

"2. Cadaver blood obtained from six to eight hours after death remains sterile and preserves its living properties.

"3. The recipient of cadaver blood is afforded ample safeguards by serologic tests of the blood, a bacteriologic check-up as to its sterility, and a careful necropsy.

"4. Because of fibrinolysis, blood of individuals dying suddenly remains fluid and can be preserved for more than three weeks.

"5. The therapeutic effect of cadaver blood does not differ from that of blood from living donors.

"6. The technic of obtaining blood from a cadaver is simple and does not require any special apparatus.

"7. Organization of stations for collection of fresh cadaver blood should offer no difficulties in the larger cities, particularly in the large hospitals for emergency cases. The supply could come from traffic accidents as well as from the medical service, where deaths from coronary thrombosis and angina pectoris are not rare."

How soon, if ever, other countries may adopt these methods I am not prepared to say, but I am following Professor Yudin's work with a good deal of interest. In fact, at the present time, I am inclined to favor the use of cadaver blood which has undergone fibrinolysis over that of blood preserved with the aid of an anticoagulant.

Its use appeals to me particularly in relation to the battlefield. After all, how could a dying soldier better aid a wounded comrade than by contributing the blood which he no longer needs?

THE "BLOOD BANK"

As reports of this work began to filter through to these shores, interest in the preservation of blood was given a sharp impetus. Legal obstacles as well as prejudice against the idea of using cadaver blood made such a source of supply unavailable at the time, but Dr. Bernard Fantus[25a], Director of Therapeutics at the Cook County Hospital in Chicago, conceived the idea of collecting excess amounts of blood from relatives and friends of patients in need of transfusions so as to keep a constant and immediately

available supply on hand. The system of deposit and withdrawal suggested the name "blood bank" and so this particular system has become known.

Another idea as to source of supply was conceived and successfully carried out by J. R. Goodall[26], of Montreal, who utilized placental blood. He says this is a "safe, constant, efficient and lucrative source of blood for transfusion" in any large lying-in hospital.

This pioneer work has attracted many followers, and blood banks have sprung up in many of our larger hospitals in this and other cities throughout the country.

Reports have appeared in the literature from time to time from various sources. On the basis of these I have attempted to evaluate, in so far as is possible at this time, the status of whole blood and freshly citrated blood as compared to blood preserved for several days. It must be remembered that this latest development is still in an evolutionary stage, and any conclusions which may be reached today, may, through improved methods and devices, have to be revised in a few months or years.

COMPARISONS IN TECHNIC

Ever since Lewisohn demonstrated that sodium citrate was an efficient and relatively harmless anticoagulant it has been possible to administer blood in the same manner that one would give a simple saline infusion. This, of course, holds true of any preserved blood.

If ease of accomplishment were the only or the chief consideration in blood transfusion, no discussion of this point would be necessary. However, some of us consider this the least important consideration, of value principally under conditions where it is difficult or impossible to administer whole blood.

In spite of improvements in technic, in care and in preparation of the apparatus and in purification of the diluents, which Cotui of Bellevue Hospital accomplished by filtering out the pyrogenic substances from distilled water, there still remains a pretty well established belief that in certain blood dyscrasias and infections and in uncontrolled hemorrhage, such as that from gastric or duodenal ulcers, citrated blood is less effective than unadulterated whole blood.

If these contentions are true of freshly citrated blood, they are certainly true to a much greater degree of blood kept in an icebox for two or three weeks.

In babies and small children, who tolerate citrated blood better than adults, probably because of relatively smaller dosage, I believe freshly citrated, and possibly preserved, blood has a definite field of special value, provided it is not employed in certain blood dyscrasias such as hemorrhagica neonatorum and hemolytic jaundice.

ECONOMIC CONSIDERATIONS

From an economic viewpoint there is no question but that the use of cadaver blood entails less overhead expense than any other system. When it comes to the blood bank there is less certainty on this point.

Unquestionably, large public institutions, such as Cook County Hospital in Chicago and Bellevue Hospital in New York, have been able to save substantial amounts by substituting the blood bank for the former professional donor service, but to my mind there is a better and quite as economical a solution. For many years the great city of London has met all its blood transfusion needs through a system of volunteer donors under the management of the British Red Cross[27]. This system was established in 1921 and from a very modest beginning has developed into a large, smoothly functioning organization which in 1938 supplied to the London area alone 2,698 donors for 6,628 transfusions at an average cost of 7s. 6d. ($1.87)[27]. A similar, though, of course, much smaller organization, has been func-

tioning efficiently in Rochester, N. Y., for the past two years.

Our own Blood Transfusion Betterment Association of New York, which refused to sponsor a blood bank, is at present studying the feasibility of establishing a volunteer donor service in this city for all patients for whom fresh rather than conserved blood is desirable but who are unable to pay for a professional donor. It is also possible that with the facilities at our disposal we may be able to furnish this service without any charge, or at most a very small one. Such a service would be available to small as well as large institutions, while the blood bank, because of the initial cost of establishment ($1,200 to $1,500) and the not inconsiderable cost of maintenance, is not practicable for any except the larger hospitals.

Dr. Donald G. Henderson, Director of Laboratories, Jefferson Davis Hospital, Houston, Texas, reported in the publication *Hospitals* for June, 1939, that the approximate cost of initial equipment for their bank was as follows:

Refrigerator (must be large and vibration proof)	$1,200
Glass storage bottles	50
Filters	50
Linen	25
Rubber tubing, needles, etc.	25
Chemicals	25
Salary for extra help (per month)	125
Total	$1,500

The maintenance cost for material and salaries would approximate $2,000 a year in such an institution, where about 750 pints of blood were used in six months.

My chief criticism of blood banks has been the precipitate adoption of the plan purely on an economic basis, without proper investigation of important and possibly dangerous changes which preserved blood may undergo and without careful consideration of other alternatives which may very well prove to be even more economical than the blood bank but which do not sacrifice the established values of fresh blood.

This criticism, however, would not apply to conditions such as existed during the recent war in Spain. The Madrid Blood Transfusion Institute reported as high as 100 transfusions in a single day and the use of 400 liters of blood per month. I have seen no statistics of their results, but many lives must have been saved through the availability of immediate transfusion.

Another alternative for the use of preserved blood, particularly well adapted for emergencies and for use in first-aid battle stations, is the nonspecific blood plasma, first used for transfusion purposes by Tatum and Elliott[28]. By mixing the plasma of various blood groups they greatly reduced its agglutinating power, which was further inhibited by the addition of a diluent, so that the mixture could be used immediately without the delay of grouping or compatibility tests. Put up in sterile containers of the Vacoliter type, it will keep for months without refrigeration and can be easily transported.

Edwards, Kay and Davie[29] have recently reported an important modification of this procedure, which has been adopted for military use by both the British and the French authorities. They developed a simple and inexpensive process for drying the mixed plasma, which is then put up in sterile ampules for storage or transportation to the front. Twenty grams of this material, when redissolved in 250 to 500 cc. of distilled water or 5 per cent glucose solution, provides a medium equal to 500 cc. of whole blood in its fibrinogen, serum globulin and serum albumin content, lacking only the cellular elements. If severe hemorrhage demands cellular replacement, the use of plasma will provide volume and combat shock[30] until whole blood transfusion is

available. It is my prediction that we will shortly see this form of therapy in general use.

REACTIONS

In regard to reactions following the use of preserved blood, just as in the use of freshly citrated blood, the reports received so far are highly variable. As previously stated, Yudin reported reactions in 20 per cent of his patients receiving cadaver blood preserved with sodium citrate, and only about 5 per cent in those receiving blood which had undergone fibrinolysis and to which no anticoagulant had been added.

Fantus[25b] of Cook County Hospital, Chicago, reported in January, 1938, that previous to the establishment of their blood bank, 8 per cent of the transfusions done at that institution were followed by reactions. Since preserved blood has been used the percentage of reactions has been definitely lower (6.76 per cent).

Charles S. Cameron and L. Kraeer Ferguson[31] of the Philadelphia General Hospital, in a survey of 1,000 transfusions with citrated preserved blood performed at that institution, reported in August, 1938, that the incidence of reactions was 7.4 per cent.

George R. Dawson[32] of Charleston, S. C., in April, 1938, reported a series of 1,000 transfusions from the Roper Hospital. Of these, 780 were whole blood transfusions made by the multiple syringe method, with 1.1 per cent reactions; 220 were of freshly citrated blood, with 3.6 per cent reactions.

Beck[33] made an extensive analysis of 17,000 transfusions. He found the incidence of reactions was 30 per cent following citrate transfusions and 11 per cent following unmodified whole blood transfusions.

Victor Horsley Riddell[27] of St. George's Hospital, London, in his recent book, *Blood Transfusion*, gives the following statistics on reactions following the use of preserved blood:

Author	*Period of Conservation*	*No. of Trans.*	*Reactions*
Alverov U.S.S.R.	1- 5 days	53	69.9%
	6-10 days	23	69.4%
	11-15 days	12	83.1%
Mayo Clinic U.S.A.	1-12 days	149	12.8%
Bagdassorov Moscow	1-14 days	2,790	65%
Elliott *et al.* England	4-19 days	50	16%
Biddle and Langley	1-14 days	150	15%

He states also that "transfusions of stored blood should be given at a drip rate unless the circumstances are exceptional."

The wide variation in figures indicates that various factors, such as method and technical skill, as well as the kind of blood used, enter into post-transfusion reactions.

An interesting symposium on blood transfusion was held at a meeting of the Chicago Medical Society, November 9, 1938. It was stated at that meeting that at the Cook County Hospital no blood was being kept for more than ten days, as it was found that the incidence of reactions increased rapidly after that time and that an analysis of 1,196 transfusions since that rule was adopted showed a reduction in reactions from 13.5 per cent to 6.76 per cent.

PHYSICAL AND CHEMICAL CHANGES

At that same meeting Dr. Bernard Fantus[25c], the originator of the blood bank, remarked that "there may be some danger, because of the enthusiasm for the accomplishments of this preserved blood, of forgetting that it has decided limitations. . . . It must be remembered that the preservation of living white corpuscles or platelets has not yet been perfected.

"Therefore, when white corpuscles are needed, nothing but fresh human blood will serve the purpose. The blood platelets are not sufficiently preserved to be of much use in sepsis or conditions due to blood platelet deficiency."

He made a further remark with which I also agree, to the effect that "since blood

preservation has made blood transfusion a simple procedure, it is being used in many cases in which there can be no hope of benefit, and this should be discontinued."

We may add to the foregoing observations the findings of Rhoads and Panzer[34], of the University of Pennsylvania Hospital, regarding the prothrombin time of bank blood (1939). A modification of the Quick method was employed in their determinations. They found a rapid diminution in the prothrombin concentration of preserved blood, until by the tenth day it had declined to 20 per cent of the original concentration, or an 80 per cent loss in potency. They therefore conclude "on the basis of the Quick method, that blood that has been in the bank a week or more would be practically useless in the treatment of the acute prothrombin deficiency encountered in jaundiced patients. . . . Blood that has been in the bank three days would probably be of some slight value but it would be so inferior to freshly drawn blood that we recommend that only the latter be used when the transfusion is intended to combat the hemorrhagic tendency in jaundice." However, Lord and Pastore[35], using a different method, found that while the diminution in prothrombin concentration was progressive, it was not particularly rapid during the first ten days.

Dr. John Scudder[36] has demonstrated that there is a progressive loss of potassium from the red cells, until by the tenth day there is sufficient concentration of potassium in the plasma to make the use of this blood potentially dangerous in certain types of cases.

These observations of the physical and chemical changes involved in blood transfusions come from sources too reliable to be questioned or ignored.

CLINICAL RESULTS

The clinical observations seem to vary in about the same degree as do the reports on reactions.

Rosenthal reports few reactions and excellent clinical results from the use of preserved blood at Mt. Sinai Hospital, although he did observe a number of cases of jaundice following the administration of bank blood.

However, at Bellevue Hospital, on Dr. Studdiford's service (gynecology), the reactions were more frequent, and the clinical results were very much inferior to those obtained with whole blood. Red cell counts and hemoglobin determinations were done on a fairly large series of cases and the average percentage of improvement was far below that noted after whole blood transfusions.

Another clinician connected with one of our largest institutions told me that reactions were observed much more frequently after the use of preserved blood than of whole blood.

It seems to be the consensus of opinion that citrated blood should not be preserved for longer than ten days and that it is wiser to use it within five days. It is also agreed that the system is economical only for large institutions and is not practical for hospitals requiring less than fifty transfusions per month.

CONCLUSIONS

To sum up the evidence for and against the use of preserved blood in transfusions, *we have on the credit side:*

1. Economy of operation compared to professional donor service, though voluntary donor systems have proven even less expensive.
2. Immediate availability of blood for the few emergencies that demand such prompt aid.
3. Simplicity of administration.

Summarizing the objectionable features of preserved blood and those qualities in which it is inferior to whole blood, *we have on the debit side:*

1. Rapid loss of white cells and platelets.

2. Rapid loss of prothrombin concentration in the blood.

3. Increasing fragility of the red cells, so that very careful handling is essential to the prevention of early hemolysis.

4. Loss of potassium from the red cells, so that by the tenth day there is a possibly dangerous concentration of this element in the plasma.

5. Greater frequency and severity of post-transfusion reactions, marked after ten days (according to the majority of reports).

6. Limitation of therapeutic value, as it is contraindicated in sepsis, in blood dyscrasias and in control of hemorrhage, and, as Scudder says, it may be toxic when used too rapidly in massive doses "in pathologic states associated with potassium retention or sensitivity."

SUMMARY

On the basis of the evidence so far available, it would seem that preserved blood falls so far short of the superior quality of whole blood that it is unjustifiable to adopt it generally for transfusion purposes at this time.

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RÉSUMÉ

Transfusion de sang et sang préservé

Sur la base de preuves jusqu'ici à disposition, il semble que le sang préservé est bien loin de la qualité superieure du sang entier, tant que il n'est pas justifié maintenant de adopter son usage generalisé pour transfusions.

ZUSAMMENFASSUNG

Bluttransfusion und Konserviertes Blut

Auf Grund der bis jetzt bekannten Tatsachen scheint es, dass dem konservierten Blute so viele der wertvollen Eigenschaften von frischem Blute fehlen, dass es nicht gerechtfertigt erscheint es bereits allgemein für Transfusionszwecke zu verwenden.

RESUMEN

Transfusiones de sangre, y el uso de sangre conservada

Si podemos juzgar de la evidencia que actualmente tenemos, podemos decir que no se puede justificar el empleo de la sangre conservada, ya que falta mucho ésta. La calidad de la sangre fresca es superior.

RIASSUNTO

Trasfusioni di sangue e sangue conservato

Sulla base delle prove fin'ora a disposizione sembrerebbe che il sangue conservato fosse ben lontano dalla qualità superiore del sangue intero, tanto che non è giustificato per ora adottare il suo uso generalmente per trasfusioni.

Transplantation of the Ureters into the Rectosigmoid*

WILLIAM E. LOWER, M.D.
CLEVELAND, OHIO

THE operation for the transplantation of the ureters into the rectosigmoid is most frequently performed for the distressing congenital anomaly known as exstrophy of the bladder. Probably the first clinical operation was performed about 1892 or 1894 by Dr. Maydl, who reported several cases in which he had transplanted a segment of the bladder, which contained the ureteral orifices, into the rectum, a procedure which became known as the Maydl operation. His theory was that ureteral orifices must be maintained in order to prevent reflux. Following this operation, a great many surgeons all over the world began to devise methods of transplanting the ureters into the rectum, and a great many varieties of the operation were performed.

Perhaps the leader in this field, the man who did most in the way of research to work out a technic which was practical and efficient, was the late Dr. Coffey of Portland, Oregon. He demonstrated, by transplanting the ureter just underneath the mucous membrane of the bowel, that the gas and contents of the bowel would, by pressure, act as a valve and prevent reflux. Some form of his technic, I believe, has since been adopted by most surgeons.

Sufficient time has now elapsed so that we are able to place a true evaluation on the end results. We know of some patients who over twenty years have remained in good condition and been able to carry on their work. This operation is not performed solely to relieve exstrophy; in any case in which there is an uncontrollable incontinence or in which total cystectomy is to be done, this procedure has a practical use.

*Summary of Motion Picture presentation by Dr. Lower on the subject indicated at the Fifth Assembly of the United States Chapter of the International College of Surgeons, Venice, Florida, February 13, 1940.

Editorial

Solemnity of the Post-Mortem Table

FROM time immemorial, in the age of primitive man, death was held to be unnatural and life everlasting. Man has fought death from the beginning of time, when illness and disease were unknown and held as mysterious, attributed to evil spirits and not to natural causes. The preservation of the dead was the earliest attempt to perpetuate life and to deny mortality. The dead were sacrosanct to the Egyptians who, while perfecting the art of mummification, pursued the embalmers whom they employed, threatening their death for touching and desecrating their beloved ones whom they sought to immortalize.

Out of this struggle of the living for the dead has come to us the earliest knowledge of the human body. The centuries which have rolled by leave engraved upon the sands of time these lingering and fragmentary efforts and attempts to solve the mystery of life and death.

While mankind reached the light of knowledge in countless other ways and varied endeavors, superstitions concerning the sanctity of the flesh and the mystery of the good and of the evil spirits prolonged ignorance of the human body. The comprehension of the human body and its functions can be said to be a relatively modern achievement.

Vesalius' *De Fabrica Humani Corporis* laid the foundation for our present knowledge of anatomy, just as Rokitansky's reported 30,000 personally conducted autopsies laid the foundation for our knowledge of morbid anatomy and pathology.

This basic and fundamental erudition is most essential to an all-around command of medical and surgical efficiency. Diagnosis, recognition of the morbid processes, and skillful successful treatment are unattainable without possession of these main roads of information and understanding.

The dissecting room exploration of regional and topographic anatomy, thorough mastery of neurovascular lines of control and supply, make clear structural and functional mechanics and prepare the way for comparative evaluation of the body in health and disease.

The post-mortem table affords teaching not only of the mechanism of fatal termination in disease and injury, but also reveals the lethal course and the *modus operandi* of the morbid processes.

Neither dissection nor autopsy has been a routine practice in quest of knowledge in the long past. Horror and prejudice worked fanatical and deterrent influences for centuries. Progress in this dominant sphere of knowledge has been retarded and is, in fact, only of recent origin and popularity.

Dissection for the thorough knowledge of normal anatomy and post-mortem medical inquest are both purposeful and demand extra responsibility in performance and in analysis of investigation.

Hospital efficiency nowadays implies outstandingly accurate and complete case histories, clinical appraisal of diagnostic findings and, in the event of death, autopsy verifications of clinical evidence and recording of collateral or additional information and findings. Hence there should be no doubt left as to the accuracy of the interpretation of ante-mortem and post-mortem data.

Only experienced, expert opinion has any value in the report of post-mortem findings, and a beginner's attempt to analyze minor and gross details is frequently fruitless mutilation and failure.

Unsatisfactory autopsies yielding no clues to causes and results are signally the product of incompetent performance. Just as a carefully obtained case history and past history with reference to heredity and other factors constitute the diagnostic formula, the final report of post-mortem examination should competently verify or disprove the clinical evidence of ante-mortem findings and reveal such obscure post-mortem evidence as may consistently explain unsuspected as well as recognized structural changes.

Relegating the performance of autopsy to interns or resident staff without the personal supervision and report of the experienced pathologist should be forbidden. If not forbidden, it should be so regulated that while giving opportunity to beginners for the experience of autopsy work, the entire procedure should be under the supervision, direction and final interpretation of the experienced pathologist.

The formal dignity of a necropsy and the scientific value of accurate recordings and interpretation should be incontrovertible in expert hands, and gross pathology, sustained by histologic proof, completes the evidence. Thus experience and science prevail over hitherto unknown phenomena.

DESIDERIO ROMÁN

The President's Page—United States Chapter

A SAD LOSS

With heavy heart, the President announces the death of our beloved First Vice-President, Dr. P. Brooke Bland.

Dr. Bland died October 31, 1940, in his home city of Philadelphia, where he had given the best years of a notably useful life to the education and training of young men coming into the medical profession.

As we bow our heads over the bier of this true son of medicine, let us not regard the mortal clay, but rather the wisdom, the skill, the consecrated purpose which he brought to bear upon whatever he touched as a doer and a teacher. Let us think of Brooke Bland as he is, living in the hearts and the skillful fingers of the men he helped to shape.

His name in the annals of our movement is one of our most treasured possessions. May it be that we shall redeem the great hopes he held for us.

F. M. DOUGLASS, M.D., PRESIDENT

OUR OPPORTUNITY

My collaboration in the previous Membership Letter dealt somewhat briefly with our responsibility in the light of crumbling world civilization, as we witness the wanton destruction of life and of the treasures of art and science, arresting normal progress and inhibiting initiative and creative faculties.

Inspired by the program and the scope of the basic activities of the International College of Surgeons, I am impelled by the promise of the opportunities which lie before us to spread the seeds of fruitful knowledge in the unique plan conceived by the founders of the International College of Surgeons.

Specifically what are our opportunities? Authors and teachers freely give of their knowledge in didactics, clinical and bedside instruction, or by means of pamphlets, monographs, books and journals. Thus medical literature reaches every nook and corner of the earth.

Numerous colleges, teaching centers and wide avenues of publicity place new knowledge within the grasp of student and laity throughout the world. Standard-setting medical groups, community, county, state and national organizations, passing upon the fitness of candidates for advancement, credit and honors, seek to qualify and measure the fitness required to practice medicine and specialties.

With it all, the International College of Surgeons sets out upon a program of teaching, to elevate the rapidly multiplying medical experience of surgical practitioners. Is this not already amply provided for? May we say no, and definitely prove that the International College of Surgeons is in quest of far-reaching teaching ideals.

The International faculty is unlimited in its scope. Its academic scheme draws upon a wealth of minds and languages, weaving a common fabric or texture the like of which is unattainable without the interchange of interest and basic purpose implied in internationalism.

Our "credential tender," without in any way interfering with recognized university efforts and postgraduate studies, is the instrumentality distinguishing the facilities granted by the College and which do not exist in any like organization. The Guilds must be stimulated, as they too are an important creation of the College in its academic formula for educational advancement.

DESIDERIO ROMÁN, M.D., PRESIDENT-ELECT

NEWS ITEMS

The Guilds

In Chicago recently, Dr. Román spent an entire day with Dr. Charles Arnold, Director of our Guild work in the Western states, and Dr. George S. Foster, Director in the Eastern states. Dr. Román is the general director.

The three men conducted a thorough discussion of a plan for a nationally integrated program for our Postgraduate Study Guilds. A national program is, of course, a very large order and one which would not be served by hasty conclusions. The President is of the opinion that very satisfactory progress is being made, and that the results of the work to which Drs. Román, Arnold and Foster are giving so much of their time will be a decisive factor in the unfolding of our educational program.

Dr. Román has had access to the returns from the questionnaire which the President circulated several months ago to determine what our men are doing on the educational front and what help they want from their officers.

F. M. D.

Milwaukee Society of Clinical Surgery

At the meeting of the Milwaukee Society of Clinical Surgery on January 28, 1941, Dr. R. W. Roethke will be installed as President. On March 25, 1941, the society will have a joint meeting with the members of the International College of Surgeons of Wisconsin.

Western Activities

Since the Florida Assembly meeting in February of this year, there has been a progressive development in the Guilds throughout the West. Colorado, Nebraska, New Mexico and Montana all have held either business or scientific sessions, in some instances both. Both these Guilds and others which are in the process of being formed are planning fall and spring Guild meetings.

Nebraska expects to hold a Guild meeting in connection with Creighton University Medical School during the month of November.

Recent reports from Colorado indicate that they will have a fall meeting and plan to have a meeting next April.

Montana expects to have a meeting this fall at the Tuberculosis Hospital at Galen, where Dr. Frank I. Terrill, surgeon in charge, will demonstrate what he is doing in chest surgery. At their Guild meeting next spring, to be held in Great Falls, they are arranging for Dr. Fred H. Albee, President of the International, to assist them in an orthopedic clinic.

It is the earnest desire of Dr. J. C. MacGregor of Great Falls, Director of Guilds for the Northwest states, and of Dr. Charles H. Arnold, Lincoln, Neb., Director of Guilds of the Western states, that Associate Members, Members and Fellows of any of these states request any assistance they may desire in the formation or development of Guilds in their respective states. They will be glad, indeed, to give freely of their time to assist in this work.

Dr. Arnold

Montana Guild Meeting

The Montana Surgical Guild of the International College of Surgeons will meet at Galen, Montana, on Saturday, December 21, 1940. There will be a General Surgical Clinic at 9 a.m. by Dr. F. I. Terrill, F.A.C.S., F.I.C.S. A discussion on Thoracoplasty (first stage) will be opened by Dr. C. H. Fredrickson. At 10:30 Bronchoscopy will be discussed by Dr. F. D. Hurd. At 11:30 Phrenic Nerve Paralysis will be evaluated. At 12:30 demonstrations on various phases of Pneumothorax will be presented and discussion opened by Dr. J. H. Irwin. At 1:30 luncheon will be served. A general discussion of the cases presented will begin at 2:30, to be followed when completed at 4:30 by the general business meeting. The officers of the Montana Guild are: Dr. J. H. Garberson, President; Dr. F. E. Keenan, Secretary; Dr. J. C. MacGregor, Director of Guild Activities.

Meeting of the Philadelphia Guild

Meeting of the Philadelphia Guild will be held December 19, 1940, in the Surgical Department of the Naval Hospital of Philadelphia. The Committee on Arrangements is composed of Drs. Desiderio Román, Moses Behrend and William Bates. The program will consist of a Surgical Clinic on Thyroid Surgery by Dr. Román and a Symposium on Anesthesia conducted by Dr. Henry Ruth and Fred Haugen. The activities will conclude with a dinner at 6:30 at the University Club of Philadelphia.

New England Guild Meeting

The meeting of the New England Activities Committee of the United States Chapter of the International College of Surgeons for the Teaching Guild was held in Westfield at the Westfield State Sanitarium on Tuesday, December 10, 1940.

Order of Business

GEORGE S. FOSTER: Director Eastern States, International College of Surgeons. Surgeon-in-Chief, Lucy Hastings Hospital, Manchester, N. H. Address of Welcome.

ERNEST M. DALAND: Director of Pondville Hospital and Westfield Sanitarium, Cancer Section. Cancer of the Lip—Operative Technic—Slides. Discussion by Stephen A. Cobb, Surgeon-in-Chief, Henrietta D. Goodall Hospital, Sanford, Maine.

JOHN W. TURNER: Roentgenologist, Westfield Sanitarium, Cancer Section. Diaphragmatic Complications Secondary to Tumors. Discussion by Thomas F. Broderick, Visiting Orthopedic Surgeon, St. Elizabeth's Hospital, Boston, Mass.

ALFRED M. GLICKMAN: Visiting Surgeon, Springfield Health Dept. Hospital; Assisting Visiting Surgeon, Springfield Hospital. Embryonal Tumors of the Ovary. Discussion by Edward S. Brackett, Consulting Surgeon, Dept. of Gynecology, Rhode Island Hospital, Providence, R. I.

ROBERT FIENBERG: Pathologist, Westfield Sanitarium, Cancer Section. The Detection of Bone Metastases by Means Other Than X-ray. Discussion by R. Nelson Hyatt, Surgeon-in-Chief, Shriner's Hospital, Springfield, Mass.

FRANK H. BAEHR: Visiting Surgeon, Westfield Sanitarium, Cancer Section; Consulting Surgeon, Springfield Health Dept. Hospital. The Treatment of Rectal Malignancies with Demonstration of Cases. Discussion by James A. Gettings, Visiting Surgeon, St. Raphael's Hospital, New Haven, Conn.

JEROME M. LYNCH: Proctologist, New York Polyclinic; Consulting Physician, New York Neurological Institute. The Lynch Operation for Rectal Cancer, Movies. Discussion by Adam P. Leighton, Surgeon-in-Chief, Dr. Leighton's Hospital, Portland, Maine.

JAMES A. SEAMAN: Urologist, Springfield Hospital; Urologist, Westfield Sanitarium, Cancer Section. Bladder Malignancies. Discussion by George P. Cheney, Visiting Surgeon, Lawrence and Memorial Associated Hospitals, New London, Conn.

WILLIAM SEAMAN BAINBRIDGE: International Treasurer. The End Result of Surgery in Breast Cancer.

The officers of the New England Activities Committee are: Dr. George S. Foster, Chairman; Dr. Frank H. Baehr, Secretary; and Drs. Edward S. Brackett, Thomas F. Broderick, George P. Cheney, Stephen A. Cobb, James A. Gettings, Alfred M. Glickman, Adam P. Leighton, Edward R. McGee and William H. Ryder.

New England Activities

The New England Activities Committee held its regular fall meeting at the Bond Hotel in Hartford, Conn., on Thursday, October 20, 1940.

It was planned to hold the first Guild meeting of the new season in Westfield, Mass., November 10, at the Commonwealth Hospital for Malignancy.

The January Guild meeting is being planned for New Haven, Conn., and the program for the balance of 1941 contemplates Guild sessions in Massachusetts, Maine, New Hampshire and Rhode Island.

The committee feels that we should lay great stress upon the Guild work this year, believing that we shall find our best opportunities for Chapter development in the unfolding of a really strong educational program.

We are entertaining a limited number of applications for the admission of new Fellows, Members and Associate Members.

DR. FOSTER

Meeting of Nebraska Post Graduate Study Guild

This meeting was held at the Nicholas Senn Hospital under the direction of Dr. E. C. Henry of Omaha, President of the Guild. Dr. Ernest Kelley, Professor of Neurology at Creighton University, discussed the surgical treatment of syringomyelia with case presentation.

Dr. Harry H. Everett, F.I.C.S., of Lincoln, Nebraska, presented several surgical cases. Dr. W. L. Sucha, Professor of Orthopedic Surgery at the Creighton Medical College, discussed compound fractures, presented numerous case reports and illustrated his talk by colored motion pictures. Dr. Thomas McCurdy, Assistant Professor of Pathology at Creighton Medical School, spoke on Bone Pathology and the Physiology of bone healing. After luncheon Dr. D. T. Quigley addressed the Guild on Vitamins in Surgery.

Dr. C. S. Moran, Assistant Professor in Pathology at Creighton Medical College, discussed internal secretions accompanied by colored motion pictures, illustrating the physiology of the endocrine glands.

Forty-seven attended. A representative from Sioux City, Iowa, and one from McCook, Nebraska, participated.

A meeting of the Guild will be held next spring. Dr. Fred H. Albee of New York City, President of the International College of Surgeons, is expected to conduct a clinic at that time.

Professor Angel H. Roffo has been appointed the incumbent of the new chair of "cancerology" of the faculty of medicine of the University of Buenos Aires.

The Second National Medical Congress in Peru is to be held this month in Arequipa under the auspices of the Peruvian Government in connection with the four hundredth anniversary of the founding of the city. There will be sections for medicine, surgery, hygiene and social medicine.

The Sedgwick Memorial Medal of the American Public Health Association has been awarded posthumously to Dr. Hans Zinsser.

Dr. Andrew C. Ivy, Nathan Smith Davis professor of physiology and pharmacology and head of the department at the Medical School of Northwestern

University, will give the eighth E. Starr Judd lecture at the University of Minnesota on January 15. The subject of the lecture will be "The Mechanisms of Gastric Secretion."

The funds for a fellowship of $2,000 to enable Latin American physicians to pursue graduate studies at Mount Sinai Hospital in any of the clinical or laboratory departments have been provided by the Dazian Foundation for Medical Research.

The New York Medical College and Flower and Fifth Avenue Hospitals will receive $242,531, the residue of the estate of Mrs. Helen S. Case, who was the wife of the late Major James F. Case, mining engineer.

The JOURNAL of the American Medical Association states that a Mayo Memorial Commission has been appointed by Governor Harold E. Stassen, of Minnesota, to study a proposal for the establishment of a fund of $250,000 through public subscription throughout the world for a memorial to the late Drs. William J. and Charles H. Mayo. State Senator William B. Richardson, of Rochester, is chairman of the commission, which is composed of seventeen representative citizens of Minnesota.

Dr. Anton J. Carlson has given his library of scientific journals and monographs to the department of physiology of the University of Chicago, according to SCIENCE. He became professor emeritus on October 1, having reached the age of sixty-five years. The library includes approximately sixteen thousand classified reprints of scientific articles, twelve hundred books and research monographs and complete files of fifteen scientific journals.

The healing of cancers by treatment with fast neutron rays from the cyclotron given to forty-seven cancer patients who were too far advanced to be helped by x-rays, radium or surgery, has been reported by Dr. Robert S. Stone and Dr. John C. Larkin, of the University of California. The cancers themselves, both primary and those that had spread from the original one to other parts of the body, regressed. The primary cancers that ulcerated under the treatment "healed remarkably well." Whether or not the patients can be considered cured or whether the cancer will come back cannot be told yet, as it is only two years since the first patients in the group began treatment. Better results are predicted when the method of giving the treatment can be improved. Normal tissues are apparently not damaged irreparably by the doses of fast neutron rays necessary to produce regression of the tumors.

Dr. Louis B. Flexner, associate in anatomy in the School of Medicine of the Johns Hopkins University, has been appointed to the staff of the Carnegie Institution of Washington as research associate in the department of embryology, Baltimore. He will continue to investigate chemical interchanges in mammalian development, making use of artificially radioactive substances in cooperation with the department of terrestrial magnetism of the Carnegie Institution. Dr. Herbert A. Pohl has been appointed as research assistant in the department of embryology and Dr. Alfred Gelihorn a research fellow. Dr. Inez Colombo de Allende, during the past year traveling fellow of the Argentine Association for the Advancement of Science at the University of Rochester, has been appointed to a Rockefeller traveling fellowship and will spend the year 1940-41 at the department of embryology of the Carnegie Institution.

Dr. Charles H. Best, professor of physiology at the University of Toronto, will deliver the second Harvey Society Lecture of the current series at the New York Academy of Medicine on November 28. Dr. Best will speak on "Thrombosis and the Action of Heparin."

Prize Award

A first prize of $1,000, with other prizes totalling $500, is being offered by the Van Patten Pharmaceutical Company, 54 West Illinois Street, Chicago, Illinois, for the best paper by an American physician on the subject of Vascular Hypertension to be published in a recognized American medical journal during the first six months of 1941.

The prizes will be awarded on the basis of votes cast by American physicians; recipients will be announced in medical journals in November, 1941.

Mexican News

A new publication has been inaugurated in the city of Irapuato, state of Guanajuato, to be known as *Guanajuato Medico.*

Dr. Manuel A. Manzanilla, F.I.C.S., has been elected Counsellor for the National Council for the Prevention of Accidents.

Dr. Donato G. Alarcon, F.I.C.S., has been designated by the Mexican Sociedad de Tisiologia as a delegate to the Fifth Pan-American Congress for the Study of Tuberculosis, to be held in Buenos Aires from October 13 to 17, 1941.

The Executive Council of the National Mexican Chapter of the International College of Surgeons has elected Dr. Alfonso Ortiz Tirado, F.I.C.S., as Regent for Orthopedic Surgery.

Great enthusiasm and activity mark the work of the Mexican Chapter of the International College of Surgeons in arranging for the forthcoming meeting of the International Congress of Surgeons scheduled for Mexico City in August, 1941.

To insure the success of organizing activity, delegates for each state in Mexico have been named. They are:

Aguascalientes, Dr. Rafael Macias Pena; Baja California, Dr. Joaquin Galvan de la Garza; Campeche, Dr. Alvaro Vidal; Coahuila, Dr. Alberto Madrid; Chihuahua, Dr. Manuel Mendiolea; Distrito Fed-

eral, Dr. Francisco Fonseca Garcia; Durango, Dr. Carlos Leon; Guanajuato, Dr. Benjamin Gonzalez N.; Hidalgo, Dr. L. Gomez Jauregui; Jalisco Colima, Dr. Manuel R. Alatorre; Morelos-Guerrero, Dr. Angel Ventura Neri; Nuevo Leon, Dr. Jose G. Martinez; Oaxaca, Dr. Manuel Matos; Puebla-Tlaxcala, Dr. A. Cruz y Celis; Queretaro, Dr. Esteban Paulin; San Luis Potosi, Dr. Ignacio Morones Prieto; Sinaloa-Nayarit, Dr. Bernardo J. Gastelum; Sonora, Dr. Ignacio Cadena H.; Tabasco-Chiapas, Dr. Guillermo Legarde Bazan; Tamaulipas, Dr. Carlos Canseco; Yucatan-Quintana Roo, Dr. Benito Ruz Quijano.

Dr. Benjamin Gonzalez N., delegate for the state of Guanajuato, urged members to do all in their power to make the meeting a success and said, "We must all take advantage of this opportunity and be present at this world congress of surgeons which is honoring our country by meeting here in 1941."

Dr. Francisco Castillo Najera, F.I.C.S., Ambassador from Mexico to the United States, has been appointed Vice-President of the Pan-American Union.

At the close of the fiscal year of the Surgical Academy (November 29, 1940) there was, besides the usual functions, a special feature in the form of a festive celebration of twenty-five years of service by Dr. Gonzalo Castaneda, F.I.C.S., President of the Surgical Academy of Mexico and President of the Mexican Chapter of the International College of Surgeons.

The Second Convention of the Surgical Association of the Mexican Army took place in Mexico City from November 20 to 26.

The Fourth National Medical Assembly of Surgeons was held between the tenth and the sixteenth of November under the sponsorship of the Surgical Society of the Hospital Juarez.

The new Central Military Hospital of the Mexican Army, of 3,000 beds, was established in Mexico City.

ANNUAL PRIZE ESSAY ON ANESTHESIA

$250 and a Gold Medal for the Best Essay on Anesthesia

(Grant of Anglo-French Drug Companies of New York and Montreal, Canada)

COMMITTEE OF AWARDS

Dr. Andre Crotti, International President
Dr. Rudolf Nissen, International Vice-President
Dr. Frederick M. Douglass, President U. S. Chapter
Dr. A. Mario Dogliotti, Catania, Italy

Essays must reach the International Secretary, Dr. Max Thorek, 850 W. Irving Park Blvd., Chicago, Ill., not later than May 1, 1941. They must be typewritten in English in manuscript form, double space, and must not exceed 5,000 words in length. The original must be accompanied by four carbon copies.

THE JOURNAL OF THE INTERNATIONAL COLLEGE OF SURGEONS

Index for 1940 (Volume III)

By Titles and Authors

A

Achilles tendon, subcutaneous lengthening of: Preliminary report (Farill), (Oct.) 442
Acidosis in surgery (Prieto), (June) 228
Air way in anesthesia, importance (Cardenas), (Apr.) 157
Analgesia, generalized spinal (Fierro), (June) .. 214
Anesthesia, importance of air way (Cardenas), (Apr.) 157
Anesthesia in Mexico during the nineteenth century (Bandera), (June) 239
Anesthesia of the pharyngeal tonsils through the nasal cavities (Oliveras), (June) 233
Anesthesia, spinal, some considerations (Matos), (June) 252
Aneurisms, primary giant cirsoid (Garcia), (June) 207
Angina, Ludwig's: Review of 21 cases (Leonardo), (Feb.) 82
Appendical changes in the prodromal stage of measles (Newman; Milstead), (Dec.) 551
Appendicitis: Its differentiation and treatment (Gann), (Feb.) 50
Appendicular pylephlebitis (Cunha), (Feb.) 18
Arthritis, arthralgia, neuritis and allied affections treated with venom (Butler), (Aug.) 357
Arthrorisis for paralytic talipes equinus in adults, new technic (Jauregui), (June) 256

B

Blood transfusion and preserved blood (Stetson), (Dec.) 557
Bone defects, effect of transplants from the renal pelvis on the healing (Tosatti), (Apr.) 126
Bone formation in abdominal scars (Junkin), (Oct.) 447
Bone graft of the mandible with prosthetic objective (Suarez), (June) 260
Bone grafts, heterogenous (Esnaurrizar), (Apr.) 151
Bone, surgical treatment of giant-cell tumors of (Inclan), (Oct.) 389

C

Carcinoma of the rectum, maintenance of continence in operations for (Mandl), (Feb.) 11
Cataract, a general survey of the present status of our knowledge of (Blaess), (Dec.) 533
Cellulitis, pelvic (Avendaño), (June) 265
Cholecystitis, acute (Brooks; Ashley), (Aug.) .. 336
Cholecystitis, acute (McKenty), (Feb.) 69
Cleft-lip and cleft-palate repair, methods preferred (Davis), (Apr.) 116
Craniotomy, two new instruments for (Vazquez), (June) 242

D

Dislocation, congenital, of the hip: A system of treatment (Krida), (Oct.) 445
Duodenal vaterian pseudodiverticula (Manzanilla), (Aug.) 318
Duodenum, rupture by blunt trauma (Hinton), (Dec.) 485

E

EDITORIALS
Cancer philosophy (Aug.) 292
Demarcation, Is the line between medicine and surgery becoming effaced? (Feb.) 1
Mayo brothers' influence on modern surgical progress (Aug.) 295
Mexico's contributions to surgery (June) 193
Orthopedic surgery, evolution of (Oct.) 468
Post-mortem table, solemnity of (Dec.) 567
Surgery is medicine (Apr.) 97
Wounds, infected, treatment of (Oct.) 470
Endocrine considerations of a few gynecological conditions (Douglas), (Dec.) 543
Esophagoplasty, prethoracic (Gonzalez), (June) . 235
Extrauterine pregnancy with a living child at term (Salamanca), (June) 271

F

Femur, ambulatory treatment of recent fractures of the intracapsular neck, following threaded wire fixation (Compere), (Oct.) 401

Femur, simplified applicator for localization of the angle of the neck and shaft (Golden), (Feb.).. 73
Fluid administration, parenteral, preoperative and postoperative, a résumé (Emhardt), (Aug.).... 324
Foot drop, paralytic, a bone strut for (Smith), (Feb.)..... 78
Foreign body irritants producing granulomatous inflammation (Ramsey; Douglass), (Feb.).... 3
Fractures, a new traction device for the immediate treatment of (De Muth), (Oct.)..... 466
Fractures, old ununited infected, treatment of (Badgley; Harris), (Oct.)..... 413
Fractures, recent, of the intracapsular neck of the femur following threaded wire fixation, ambulatory treatment (Compere), (Oct.)..... 401

G

Gallbladder disease, indications and choice of surgical procedures (Behrend), (Feb.)..... 63
Glioma, central, of the brain (Zuckermann), (Dec.) 496
Gonorrhea and syphilis, late manifestations often mistaken for prostatic hypertrophy (Wolbarst), (Apr.)..... 168
Granulomatous inflammation produced by foreign body irritants (Ramsey; Douglass), (Feb.).... 3
Gynecological conditions, endocrine considerations of a few (Douglas), (Dec.)..... 543
Gynecology, phases of interest to the general surgeon (Magid), (Aug.)..... 369

H-L

Head injuries, medico-legal aspect of (Beaudoux), (Oct.)..... 449
Hernia, postoperative, and wound disruption (Green), (Apr.)..... 173
Hernia, strangulated—reduction en masse (Simon; Benson), (Dec.)..... 492
Hip, congenital dislocation: a system of treatment (Krida), (Oct.)..... 445
Knee, a new method for intra-articular arthrodesis (Dogliotti), (Apr.)..... 103
Liver, echinococcus cyst of, simulating a stone in the common bile duct (Gennaro), (Aug.)..... 342

M-O

Mandible, bone graft of with prosthetic objective (Suarez), (June)..... 260
Measles, appendical changes in the prodromal stage of (Newman; Milstead), (Dec.)..... 551
Medico-legal aspect of injuries to the head (Beaudoux), (Oct.)..... 449
Mentally ill, surgery in (Arp; Arp), (Dec.)..... 519
Mexico during the nineteenth century, anesthesia in (Bandera), (June)..... 239
Mineralized foods and vitamins in treatment, correlation in the use of (Albee), (Oct.)..... 425
Muscle sarcoma (Benison), (Oct.)..... 460

OBITUARIES

Besredka, Alexandre (Apr.)..... 132
Bielschowsky, Alfred (Apr.)..... 132
Busi, Aristide (Apr.)..... 132
de Martel, Thierry (Oct.)..... 476
de Quervain, Fritz (Apr.)..... 132
Lardennois, George (Apr.)..... 132
Magid, Maurice O. (Aug.)..... 377
Mowery, William E. (Apr.)..... 132
O'Shaughnessy, Lawrence (Aug.)..... 382
Obstruction, acute intestinal (Bodenheimer; Casten; Fried), (Feb.)..... 28

P

Pancreatic necrosis, acute, management (Smead), (Apr.)..... 138
Paralysis, partial, surgical elongation of the kinesiologic hip lever in (Albee), (Dec.)..... 512
Paralysis, spastic, treated with snake venomine, preliminary observations (Wheeldon), (Aug.). 362
Parathyroidectomy during the last fifteen years, development (Mandl), (Aug.)..... 297
Parenteral fluid administration, preoperative and postoperative, a résumé (Emhardt), (Aug.)... 324
Patellar advancement operation: A revised technic (Chandler), (Oct.)..... 433
Pelvic cellulitis (Avendaño), (June)..... 265
Pelvic peritonitis, surgical treatment of (Ortiz), (June)..... 262
Peritonitis, diffuse, management of patients with (Wright), (Dec.)..... 505
Peritonitis, pelvic, surgical treatment of (Ortiz), (June)..... 262
Pneumothorax, extrapleural (Behrend), (Apr.).. 133
Pregnancy, extra-uterine, with a living child at term (Salamanca), (June)..... 271
Prostatic hypertrophy, late manifestations of syphilis and gonorrhea often mistaken for (Wolbarst), (Apr.)..... 168
Pseudodiverticula, duodenal vaterian (Manzanilla), (Aug.)..... 318
Pterygium, treatment (Estrada), (June)..... 219
Pylephlebitis, appendicular (Cunha), (Feb.)..... 18

R, S

Renal pelvis transplants, effect on the healing of defects of bone (Tosatti), (Apr.)..... 126
Renal symphysis, superior (Manzanilla), (June). 201
Retroperitoneal tumors (Carson), (Aug.)..... 331
Rupture of the duodenum by blunt trauma (Hinton), (Dec.)..... 485
Sarcoma, idiopathic multiple hemorrhagic (Leonardo), (Aug.)..... 380
Sarcoma of muscle (Benison), (Oct.)..... 460
Scars, abdominal, bone formation in (Junkin), (Oct.)..... 447
Skin graft for spina bifida with meningocele or myelomeningocele (Campos), (Oct.)..... 438
Skin grafting, tube pedicle, new methods (Maltz), (Dec.)..... 526
Spina bifida with meningocele or myelomeningocele, skin graft for (Campos), (Oct.)..... 438
Stomach, benign tumors of (Shallow; Lemmon), (Aug.)..... 312

Stone in the common bile duct, echinococcus cyst of the liver simulating (Gennaro), (Aug.).... 342
Syphilis and gonorrhea, late manifestations often mistaken for prostatic hypertrophy (Wolbarst), (Apr.)..... 168

T

Thorax, treatment of the complications of penetrating gunshot and stab wounds of (Steinke), (Apr.)..... 162
Thyroid gland, general considerations and criteria in the surgery of (Román), (Apr.)..... 107
Tonsils, pharyngeal, anesthesia through the nasal cavities (Oliveras), (June)..... 233
Traction device, new, for the immediate treatment of fractures (De Muth), (Oct.)..... 466
Tumors, benign, of the stomach (Shallow; Lemmon), (Aug.)..... 312
Tumors of bone, giant-cell, surgical treatment of (Inclan), (Oct.)..... 389
Tumors, retroperitoneal (Carson), (Aug.)..... 331

U, V

Ureter, reconstruction (Nissen), (Apr.)..... 99
Ureters, transplantation into the rectosigmoid (Lower), (Dec.)..... 566
Urological surgery during the last decade, progress (Nájera), (June)..... 196
Venom in the treatment of arthritis, arthralgia, neuritis and allied affections (Butler), (Aug.). 357
Venom, snake, and snakes (Mitchell), (Aug.).... 366
Venomine, snake, in the treatment of spastic paralysis, preliminary observations on the use (Wheeldon), (Aug.)..... 362
Venoms, snake, recent developments in the pharmacognosy (Maier), (Aug.)..... 352
Vitamins and mineralized foods in treatment, correlation in the use of (Albee), (Oct.)..... 425

W

Wound disruption and postoperative hernia (Green), (Apr.)..... 173
Wounds, penetrating gunshot and stab, of the thorax, treatment of the complications (Steinke), (Apr.)..... 162

INDEX OF AUTHORS

A

Albee, F. H.: Correlation in the use of mineralized foods and vitamins in treatment (Oct).. 425
Albee, F. H.: Surgical elongation of the kinesiologic hip lever in partial paralysis..... 512
Arp, A. H., and Arp, L. C.: Surgery in the mentally ill (Dec.)..... 519
Arp, L. C., and Arp, A. H.: Surgery in the mentally ill (Dec.)..... 519
Ashley, L. B., and Brooks, C. D.: Acute cholecystitis (Aug.)..... 336
Avendano, O. R.: Pelvic cellulitis (June)..... 265

B

Badgley, C. E., and Harris, H. W.: Treatment of old ununited infected fractures (Oct.)..... 413
Bandera, B.: Anesthesia in Mexico during the nineteeth century (June)..... 239
Beaudoux, H. A.: Medico-legal aspect of injuries to the head (Oct.)..... 449
Behrend, M.: Extrapleural pneumothorax (Apr.) 133
Behrend, M.: Indications and choice of surgical procedures in gallbladder disease (Feb.)..... 63
Benison, R. L.: Sarcoma of muscle (Oct.)..... 460
Benson, H. A., and Simon, M. M.: Strangulated hernia—reduction en masse (Dec.)..... 492
Blaess, M. J.: A general survey of the present status of our knowledge of cataract (Dec.)..... 533
Bodenheimer, M., Casten, D., and Fried, J. J.: Acute intestinal obstruction (Feb.)..... 28
Brooks, C. D., and Ashley, L. B.: Acute cholecystitis (Aug.)..... 336
Butler, P.: Venom in the treatment of arthritis, arthralgia, neuritis and allied affections (Aug.) 357

C

Campos, O. P.: Skin graft for spina bifida with meningocele or myelomeningocele (Oct.)..... 438
Cardenas, V. O.: Importance of air way in anesthesia (Apr.)..... 157
Carson, W. J.: Retroperitoneal tumors (Aug.).. 331
Casten, D., Fried, J. J., and Bodenheimer, M.: Acute intestinal obstruction (Feb.)..... 28
Chandler, F. A.: Patellar advancement operation: A revised technic (Oct.)..... 433
Compere, E. L.: Ambulatory treatment of recent fractures of the intracapsular neck of the femur following threaded wire fixation (Oct.).... 401
Cunha, F.: Appendicular pylephlebitis (Feb.)... 18

D

Davis, W. B.: Methods preferred in cleft-lip and cleft-palate repair (Apr.)..... 116
De Muth, O.: A new traction device for the immediate treatment of fractures (Oct.)..... 466
Dogliotti, A. M.: A new method for intra-articular arthrodesis of the knee (Apr.)..... 103
Douglas, G. F.: Endocrine considerations of a few gynecological conditions (Dec.)..... 543
Douglass, F. M., and Ramsey, T. L.: Granulomatous inflammation produced by foreign body irritants (Feb.)..... 3

E, F

Emhardt, J. W.: A résumé of preoperative and postoperative parenteral fluid administration (Aug.)..... 324
Esnaurrizar, M. L.: Heterogenous bone grafts (Apr.)..... 151
Estrada, A. T.: Treatment of pterygium (June) 219
Farill, J.: Subcutaneous lengthening of the Achilles tendon: Preliminary report (Oct.)..... 442
Fierro, D. F.: Generalized spinal analgesia (June)..... 214

FRIED, J. J., BODENHEIMER, M., and CASTEN, D.: Acute intestinal obstruction (Feb.) 28

G

GANN, D., JR.: Appendicitis: Its differentiation and treatment (Feb.) 50
GARCIA, F. F.: Primary giant cirsoid aneurisms (June) 207
GENNARO, J. F.: Echinococcus cyst of the liver simulating a stone in the common bile duct (Aug.) 342
GOLDEN, B. I.: Simplified applicator for localization of the angle of the neck and shaft of the femur (Feb.) 73
GONZALEZ, A. A.: Prethoracic esophagoplasty (June) 235
GREEN, J. A.: Wound disruption and postoperative hernia (Apr.) 173

H-K

HARRIS, H. W., and BADGLEY, C. E.: Treatment of old ununited infected fractures (Oct.) 413
HINTON, D.: Rupture of the duodenum by blunt trauma (Dec.) 485
INCLAN, A.: Surgical treatment of giant-cell tumors of bone (Oct.) 389
JAUREGUI, E. G.: New technic for arthrorisis for paralytic talipes equinus in adults (June) 256
JUNKIN, H. D.: Bone formation in abdominal scars (Oct.) 447
KRIDA, A.: Congenital dislocation of the hip: A system of treatment (Oct.) 445

L

LEMMON, W. T., and SHALLOW, T. A.: Benign tumors of the stomach (Aug.) 312
LEONARDO, R. A.: Idiopathic multiple hemorrhagic sarcoma (Aug.) 380
LEONARDO, R. A.: Ludwig's angina: Review of 21 cases (Feb.) 82
LOWER, W. E.: Transplantation of the ureters into the rectosigmoid (Dec.) 566

M

MCKENTY, J.: Acute cholecystitis (Feb.) 69
MAGID, M. O.: Some phases of gynecology of interest to the general surgeon (Aug.) 369
MAIER, E.: Recent developments in the pharmacognosy of snake venoms (Aug.) 352
MALTZ, M.: New methods of tube pedicle skin grafting (Dec.) 526
MANDL, F.: Development of parathyroidectomy during last fifteen years (Aug.) 297
MANDL, F.: Maintenance of continence in operations for carcinoma of the rectum (Feb.) 11
MANZANILLA, M. A.: Duodenal vaterian pseudodiverticula (Aug.) 318
MANZANILLA, M. A.: Superior renal symphysis (June) 201
MATOS, M.: Some considerations on spinal anesthesia (June) 252
MILSTEAD, L. C., and NEWMAN, P. F.: Appendical changes in the prodromal stage of measles (Dec.) 551
MITCHELL, J.: Snakes and snake venom (Aug.) .. 366

N-P

NAJERA, F. C.: Progress in urological surgery during the last decade (June) 196
NEWMAN, P. F., and MILSTEAD, L. C.: Appendical changes in the prodromal stage of measles (Dec.) 551
NISSEN, R.: Reconstruction of the ureter (Apr.) 99
OLIVERAS, F. J. M.: Anesthesia of the pharyngeal tonsils through the nasal cavities (June) 233
ORTIZ, J. M. Y.: Surgical treatment of pelvic peritonitis (June) 262
PRIETO, I. M.: Acidosis in surgery (June) 228

R

RAMSEY, T. L., and DOUGLASS, F. M.: Granulomatous inflammation produced by foreign body irritants (Feb.) 3
ROMÁN, D.: General considerations and criteria in surgery of the thyroid gland (Apr.) 107

S, T

SALAMANCA, A. G.: Extra-uterine pregnancy with a living child at term (June) 271
SHALLOW, T. A., and LEMMON, W. T.: Benign tumors of the stomach (Aug.) 312
SIMON, M. M., and BENSON, H. A.: Strangulated hernia—reduction en masse (Dec.) 492
SMEAD, L. F.: Management of acute pancreatic necrosis (Apr.) 138
SMITH, L. D.: A bone strut for paralytic foot drop (Feb.) 78
STEINKE, C. R.: Treatment of the complications of penetrating gunshot and stab wounds of the thorax (Apr.) 162
STETSON, R. E.: Blood transfusion and preserved blood (Dec.) 557
SUAREZ, M. M.: Bone graft of the mandible with prosthetic objective (June) 260
TOSATTI, E.: Effect of transplants from the renal pelvis on the healing of defects of bone (Apr.) 126

V, W

VAZQUEZ, M.: Two new instruments for craniotomy (June) 242
WHEELDON, T.: Preliminary observations on the use of snake venomine in the treatment of spastic paralysis (Aug.) 362
WOLBARST, A. L.: Late manifestations of syphilis and gonorrhea often mistaken for prostatic hypertrophy (Apr.) 168
WRIGHT, T.: Management of patients with diffuse peritonitis (Dec.) 505

Z

ZUCKERMANN, C.: Central glioma of the brain (Dec.) 496

Book Reviews

Berkeley Moynihan, Surgeon. By Donald Bateman. Price, $3. Pp. 355, with 7 illustrations. New York: Macmillan Co., 1940.

LORD MOYNIHAN, the son of an army officer, studied medicine to satisfy his mother's wishes, with the intention of entering the army medical service. After completing four years at Leeds School of Medicine with honors and receiving his M.B. (London University, 1887), he was appointed house surgeon for one year to Professor Mayo-Robson at Leeds. This was followed by six months' study in London to qualify for the degree of Bachelor of Surgery and preliminary examination of the Royal College of Surgeons. He then studied in Berlin under Professors von Bergmann and von Bardeleben. Returning to Leeds, he acted as Resident Surgical Officer from April, 1890, to April, 1893. He passed the final examination for F.R.C.S. in 1890 and for Master of Surgery, London University, in 1893, receiving the Gold Medal. With six years' graduate training in surgery, at the age of 28 he entered private practice in Leeds as a specialist in surgery.

His most important contributions to science were made between 1894 and 1914, including numerous papers in every field of surgery and his well-known books. He took to the operating table all of the basic sciences under the title *Pathology of the Living*. His first recognition as a master surgeon, teacher and author in America was due to W. J. Mayo, J. B. Murphy, George Crile and others. During the World War he entered service as a major in 1914 and was promoted to colonel. To the millions of men and women serving in France during 1917-1918, the names of Berkeley Moynihan, Robert Jones, John Finney and Alexis Carrell were legends.

As humanity owes a debt of gratitude to Lord Moynihan, it is fitting that Dr. Bateman, a close friend of his son while at Oxford, has written this biography for laymen.

Moynihan's philosophy is well illustrated in his essay *The Ritual of a Surgical Operation*, published in 1920: "It is of course a platitude to say that a good surgeon is not merely one who operates well. The qualities required to make our ideal surgeon are many: gifts of character, leadership, wisdom—even wordly wisdom—compassion, and the finest technical skill. In respect of the latter we remember that surgery is not only science but an art, work demanding the highest craftmanship, and a knowledge of all the 'tricks of the tools' true play. In all the movements of the surgeon there should be neither haste nor waste. It matters less how quickly an operation is done than how accurately it is done. Speed should result from the method and the practiced facility of the operator, and should not be his first and formal intention. It should be an accomplishment not an aim. And every movement should tell, every action should achieve something. A manipulation, if it requires to be carried out, should not be half done and hesitatingly done. It should be deliberate, firm, intentional, and final. Infinite gentleness, scrupulous care, light handling, and purposeful, effective, quiet movements, which are no more than a caress, are all necessary if an operation is to be the work of an artist, and not merely of a hewer of flesh. For every operation, even those procedures which are now quite commonplace, should be executed not in the spirit of an artisan who has a job to get through, but in the spirit of an artist who has something to interpret or create. An operation should not only bring relief or health to the patient, but should give a glow of keen delight to the artist himself, a thrill of joy and a sense of complete satisfaction to a critical spectator.

"Ours has been a necessary profession ever since man's body was subject to enmity and casualty. All who practice it will need the gifts of which Thomas Fuller spoke—'an eagle's eye, a lady's hand, and a lion's heart.' Of all of us who labour honestly may it at last truthfully be said, as it was said of James the Fourth of Scotland, 'Quod vulnera scientissime tractaret'—'He was most skillful at the handling of wounds.'"

Moynihan was the founder of the Chirurgical Club which now bears his name, which in turn organized the Association of Surgeons of Great Britain and Ireland and in 1913 the *British Journal of Surgery*, which is one of the greatest scientific journals of the world today. During his lifetime he received all the honors ever given a British surgeon.

To every surgeon who had the privilege of seeing Moynihan operate he will always remain a "Master Surgeon." Not only surgeons but the members of all the learned professions will enjoy reading this book.

W. J. C.

Hugh Young, a Surgeon's Autobiography. Price, $5. Pp. 562, with over 100 drawings, some in color. New York: Harcourt, Brace & Co., 1940.

AN autobiography offers men of eminence an opportunity to record the important facts of their lives for future historians—which Professor Young has accomplished in his usual style with the help of excellent illustrations by W. P. Didusch.

While in preparatory school with George Kemper, Young published the school newspaper. Graduating from the University of Virginia in four years with an A.B., A.M. and M.D. (1894), he pursued graduate work in pathology and bacteriology at Johns Hopkins University under Professor Welch. He shortly received an appointment as Assistant Resident Surgeon under Professor Halsted, who in October, 1897, appointed him Genito-Urinary Surgeon to the Johns Hopkins Hospital. With his dynamic personality he proceeded to make his specialty a true "science." In over three hundred articles and five books he has contributed to every phase of our knowledge of the genito-urinary tract—the most important of which are

the physiology of the kidney; embryology and anatomy of the genital organs; and plastic surgery.

Humanity is indebted to Hugh Young for making prostatectomy a safer procedure. In 1908 he reported 128 consecutive perineal prostatectomies without a death and recently a series of 198 cases without a death. The famous cases of Diamond Jim Brady and Woodrow Wilson are reported in detail. With a wide experience in treating infections of the urological tract, he accompanied General Pershing to France, where he successfully applied preventive medicine to military conditions.

This book should be read by all men over fifty years of age. The illustrations which have appeared in Young's scientific articles make it intelligible to the layman.

Young is the founder of the American Urological Association and of the *Journal of Urology* and an Honorary Fellow of the International College of Surgeons. His students occupy many important teaching positions throughout the world. This autobiography published on his seventieth birthday is a tribute to his leadership. We wish him many more years of health and happiness.

W. J. C.

Fractures and Other Bone and Joint Injuries. By R. Watson Jones, B.Sc., M.Ch.Orth., F.R.C.S. Price, $13.50. Pp. 723, with 1,200 illustrations. Baltimore: The Williams & Wilkins Company, 1940.

THIS book contains much that is of value and it has the distinction of presenting the material in a unique and forceful manner. Its photography is of the best and the text comprehensive and printed on fine, glossy paper. The roentgenographic reproductions are more easily understandable because of the addition of X-ray tracings on a cellophane sheet placed over the actual reproduced roentgenograph. Occasionally the post-reduction X-ray reproduction is covered with a hinged flap which the reader lifts to see the final result produced. Every type of fracture is enumerated and the author's method of treatment is described. Among the subjects treated are bone repair, delayed union and nonunion, injuries to the soft tissues complicating fractures, compound and infected fractures, pathological and birth fractures, and fractures occurring in the trunk, upper and lower limbs, considered in order. Of particular interest to those eager to improve the fracture service of the general hospital is the appendix, in which the author delineates the organization of a fracture service. His requirements for this service are: (1) segregation of cases; (2) establishment of a massage, gymnastic and X-ray section to be used exclusively by the fracture department; (3) review of fracture cases at a daily open fracture clinic; and (4) unity of control, with a follow-up clinic to provide information in the improvement of treatment. In his experience of 12 years the author has treated 47,300 bone and joint injuries. The book is excellent both for reading and for reference and will find a well merited place in the library of every medical man.

O. R.

Gross Anatomy. A Brief Systematic Presentation of the Macroscopic Structure of the Human Body. By A. Brazier Howell, Associate Professor of Anatomy, Johns Hopkins University School of Medicine. Price, $6. Pp. 403, with 56 illustrations. New York: D. Appleton-Century Company, 1939.

THIS book might well be entitled "An Introduction to Anatomy," since it presents the salient points which the medical student should know about human anatomy and omits the details which are included in comprehensive textbooks on the subject. It accomplishes the purpose of separating essentials from nonessentials, thereby departing from present-day methods of teaching anatomy, in which the student is expected to cram a mass of material in the short time allotted to anatomy in the medical school curriculum. The book is somewhat larger than the average, measuring 9¾x6⅜ inches, but is not cumbersome. Used as the author suggests, in conjunction with a standard atlas of anatomy and a dissecting manual, it should be a valuable textbook for a course in beginning anatomy. The most confusing structures are illustrated diagrammatically. The conciseness of the volume commends it as a reference book in the physician's library.

X. J.

The Synovial Membrane and the Synovial Fluid, with Special Reference to Arthritis and Injuries of the Joints. By David H. Kling, M.D., Assistant Professor of Orthopedic Surgery and Chief of Arthritis Clinic, White Memorial Hospital, Los Angeles. Price, $5. Pp. 300, with 80 illustrations and 34 tables. Los Angeles: Medical Press, 1938.

THIS work, the first and only monograph on synovial fluid and synovial membrane, covers adequately and admirably the fields of embryology, physiology, morbid anatomy, biochemistry, bacteriology and practical medicine in regard to the subject. It is divided into four parts: The Synovial Membrane, The Synovial Fluid, Special Pathology of Joint Effusions and Clinical Applications. The last is of greatest practical value to the clinician; it contains four chapters entitled, "The Clinical Value of the Aspiration of Joint Effusions," "The Diagnostic Value of a Systematic Examination of Joint Effusions," "Combination of Aspiration with Intra-Articular Injections of Liquids and Gases," and "Technique of Aspirations and Laboratory Procedure." Proper needle approaches to be used in joint puncture are well depicted in the accompanying illustrations. More widespread use of joint puncture than is usually practiced is advocated as an aid to diagnosis and therapeutics. The book is a pioneer in a field which needs exploration and should interest clinician, bacteriologist, pathologist and biochemist.

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(1) Butler, P.: "Venomin in the Treatment of Arthritis, Arthralgia, Neuritis and Allied Affections" Indust. Med. 9: 324, 1940

(2) Wheeldon, Th.: "Preliminary Observations on the Use of Snake Venomin in Spastic Paralysis"—J. Internat. Coll. Surgeons 3: 362, 1940 Congress Pan-American Medical Assoc., 1940

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Gynecology: Medical and Surgical. By P. Brooke Bland, M.D., F.A.C.S., Professor Emeritus of Obstetrics, Jefferson Medical College, Philadelphia. Assisted by Arthur First, M.D., Associate in Obstetrics, Jefferson Medical College Hospital and Mt. Sinai Hospital, Philadelphia. Third Revised Edition. Price, $8. Pp. 877, with 529 illustrations. Philadelphia: F. A. Davis Company, 1939.

THIS revised edition of Bland's classic work on gynecology has been brought up to date by the addition of modern methods of treatment, among these being the use of sulfanilamide in puerperal complications. The chapters on menstrual disorders include an evaluation of the use of testosterone propionate. Operative technics and gynecologic procedures, postoperative treatment, therapeutics and radiology in gynecology are presented so amply and clearly that the volume should be of value to every practitioner and student. An attractive and useful feature of the book is the profusion of colored photographs and black-and-white drawings. The mature experience of the author and his innate talent for evaluating clinical entities and therapeutic indications emphasize throughout the pages of this fine work its great merit.

M. A.

INDEX TO ADVERTISERS

Abbott Laboratories.....Back Cover

D. Appleton-Century Company .....Inside Back Cover

Cook County Graduate School of Medicine.....VII

Gudebrod Brothers Silk Company, Inc.....VII

Hoffmann-LaRoche, Inc.....VIII

J. B. Lippincott Company .....Inside Front Cover

Schering Corporation.....I

The Venomin Company.....580

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PART VII
Vermiform Appendix

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PART X
Intestines

PART XI
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INDEX

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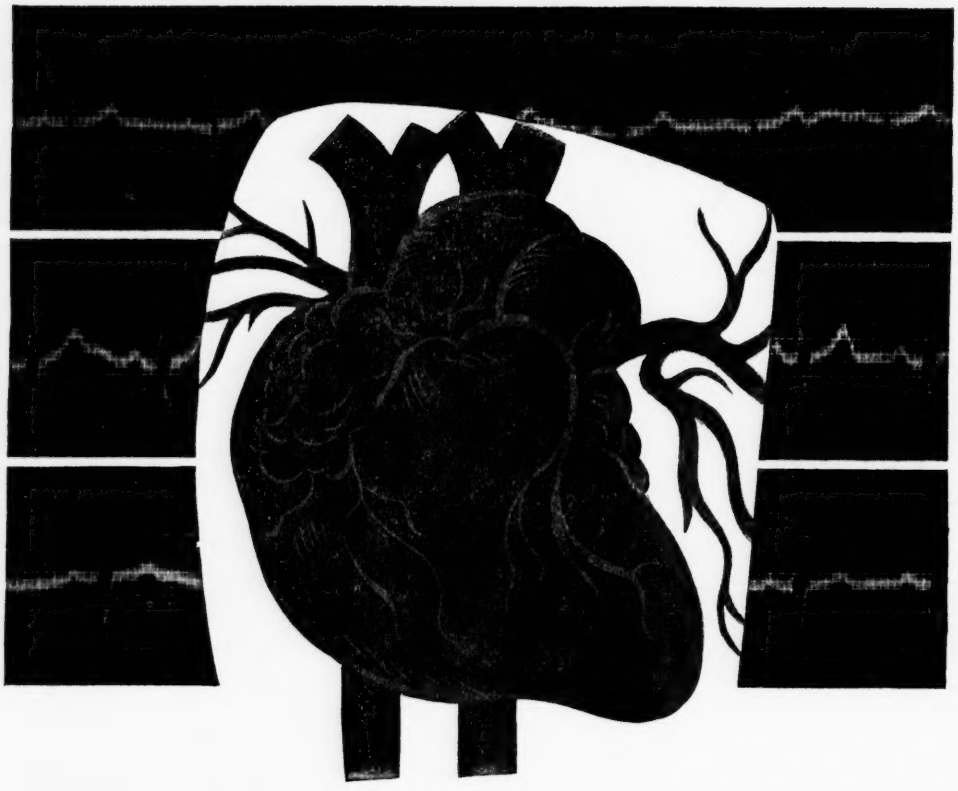

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